



**Universitas Negeri Surabaya
Faculty of Education,
Basic Education Masters Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Developer Buyerj. Mathematics in elementary school	8612202114	Compulsory Study Program Subjects	T=2	P=0	ECTS=4.48	2	June 15, 2020
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator	
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Learning model	Project Based Learning
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Program Learning Outcomes (PLO)	PLO study program that is charged to the course
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PLO-8	Able to make decisions in the context of solving science and technology development problems that pay attention to and apply humanities values based on practical or experimental analytical studies of information and data
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Program Objectives (PO)	
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PO - 1	CPMK 1 Utilizing learning resources and ICT to support mastery of mathematics learning development in elementary schools based on ethnomathematics and numeracy literacy
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PO - 2	CPMK 2 Understand the concept of developing mathematics learning in elementary school, including the nature of elementary school mathematics in a constructivist manner
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PO - 3	CPMK 3 Creating constructivist mathematics learning designs in elementary schools based on ethnomathematics and numeracy literacy creatively
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PO - 4	CPMK 4 Solve the problem of evaluating mathematics learning in elementary school innovatively and critically
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PO - 5	CPMK 5 Demonstrate a responsible attitude in individual and group assignments by avoiding plagiarism
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PLO-PO Matrix	
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	P.O	PLO-8		
	PO-1			
	PO-2			
	PO-3			
	PO-4			
	PO-5			

PO Matrix at the end of each learning stage (Sub-PO)	
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	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																	
	PO-5																	

Short Course Description	Studies that discuss the concept of developing mathematics learning in elementary school include the nature of elementary school mathematics, elementary school mathematics curriculum, understanding mathematics, teaching through problem solving, problem-based teaching planning, assessment in teaching, multicultural mathematics teaching, use of technology and media, development design methods, development Learners of Mathematical Concepts (Numbers, Measurement and Geometry, Presentation and Data Processing), and learning development practices. The assessment is carried out by involving student activity through assignment presentations and in-depth discussions of the main material. The assessment activity ends with a discussion of the discussion and reflection activities.
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References	Main :
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<p>1. 1) Van de Walle, John A. 2007. Matematika Sekolah Dasar dan Menengah. (Terjemahan oleh Suyono). Jilid 1 dan 2. Jakarta: Erlangga 2) Musser, Gary L & Burger, William F. 1997. Mathematics for Elementary Teachers: A Contemporary Approach. Upper Saddle River, NJ: Prentice-Hall 3) Kurikulum 2013 mata pelajaran Matematika. 4) Siswono, Tatag Y.E. (2017). Penelitian Pengembangan dan Perancangan. Surabaya: PPS Surabaya</p> <p>2. Reys, R., Lindquist, M., Lambdin, D. V., & Smith, N. L. 2017. Helping children learn mathematics. John Wiley & Sons.</p>							
Supporters:							
<p>1. Mariana, Neni, dkk. 2021. Pengembangan Virtual Laboratorium Rumpun Matematika PGSD FIP Unesa. Laporan hasil penelitian.</p> <p>2. Musser, Gary L & Burger, William F. 1997. Mathematics for Elementary Teachers: A Contemporary Approach. Upper Saddle River, NJ: Prentice-Hall</p> <p>3. Kurikulum 2013 mata pelajaran Matematika.</p> <p>4. Siswono, Tatag Y.E. (2017). Penelitian Pengembangan dan Perancangan. Surabaya: PPS Surabaya</p>							
Supporting lecturer		Dr. Endah Budi Rahaju, M.Pd. Neni Mariana, S.Pd., M.Sc., Ph.D. Prof. Rooselyna Ekawati, Ph.D.					
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	Explain the essence of mathematics and school mathematics learning, especially elementary schools	1. State the nature of mathematics learning in elementary schools; 2. State the functions and objectives of school mathematics learning, especially in elementary school; 3. Determine the meaning of doing/completing mathematics in elementary school conceptually and procedurally 4. Implement mathematics learning in elementary school	<p>Criteria:</p> <p>1. The selected questions have a score of 10</p> <p>2. 10 UTS questions</p> <p>3. There are 10 UAS questions</p> <p>Form of Assessment : Participatory Activities</p>	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignment and Presentation 2 X 50		<p>Material: the essence of mathematics learning in elementary schools</p> <p>References: Reys, R., Lindquist, M., Lambdin, DV, & Smith, NL 2017. Helping children learn mathematics. John Wiley & Sons.</p> <p>Material: functions and objectives of learning mathematics and the meaning of doing/completing mathematics essays in elementary school conceptually and procedurally.</p> <p>References: 1) Van de Walle, John A. 2007. Elementary and Middle School Mathematics. (Translation by Suyono). Volumes 1 and 2. Jakarta: Erlangga 2) Musser, Gary L & Burger, William F. 1997. Mathematics for Elementary Teachers: A Contemporary Approach. Upper Saddle River, NJ: Prentice-Hall 3) 2013 Curriculum Mathematics subject. 4) Siswono, Tatag YE (2017). Development and Design Research. Surabaya: PPS Surabaya</p> <p>Material: mathematics learning in elementary</p>	0%

						<p>school</p> <p>References: 1) Van de Walle, John A. 2007. <i>Elementary and Middle School Mathematics</i>. (Translation by Suyono). Volumes 1 and 2. Jakarta: Erlangga 2) Musser, Gary L & Burger, William F. 1997. <i>Mathematics for Elementary Teachers: A Contemporary Approach</i>. Upper Saddle River, NJ: Prentice-Hall 3) 2013 <i>Curriculum Mathematics subject</i>. 4) Siswono, Tatag YE (2017). <i>Development and Design Research</i>. Surabaya: PPS Surabaya</p>
2	Explains learning theories in elementary schools and approaches to learning mathematics in elementary schools.	- Mentions learning theories, namely the theories of Bruner, Paiget, Dienes, Gagne, and Van Hiele - Mentions various learning approaches, namely contextual approaches, PMRI approaches, open-ended approaches, problem-solving approaches (problem based learning)	<p>Criteria:</p> <ol style="list-style-type: none"> 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100 <p>Form of Assessment : Participatory Activities</p>	<ol style="list-style-type: none"> 1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations <p>2 X 50</p>	<p>Material: learning theories, namely the theories of Bruner, Paiget, Dienes, Gagne, and Van Hiele, various learning approaches, namely the contextual approach, PMRI approach, open ended approach, problem solving approach (problem based learning)</p> <p>References: Reys, R., Lindquist, M., Lambdin, DV, & Smith, NL 2017. <i>Helping children learn mathematics</i>. John Wiley & Sons.</p>	0%

3	Explains learning steps, use of media and creating math problems	Understanding the meaning of doing mathematics Designing and selecting effective tasks Developing problem solving strategies, teaching about solving mathematical problems	Criteria: 1.The selected questions have a score of 10 2.10 UTS questions 3.There are 10 UAS questions 4.Maximum value 100 Form of Assessment : Participatory Activities, Practice/Performance	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations 2 X 50	Material: Steps for learning elementary school mathematics 2. learning media for elementary school mathematics 3. How to create elementary school mathematics questions References: 1) Van de Walle, John A. 2007. <i>Elementary and Middle School Mathematics. (Translation by Suyono). Volumes 1 and 2. Jakarta: Erlangga 2) Musser, Gary L & Burger, William F. 1997. Mathematics for Elementary Teachers: A Contemporary Approach. Upper Saddle River, NJ: Prentice-Hall 3) 2013 Curriculum Mathematics subject. 4) Siswono, Tatag YE (2017). <i>Development and Design Research. Surabaya: PPS Surabaya</i> </i>	0%
4	Examining elementary school mathematics learning	Examining low and high grade elementary school mathematics learning	Criteria: 1.The selected questions have a score of 10 2.10 UTS questions 3.There are 10 UAS questions 4.Maximum value 100 Form of Assessment : Participatory Activities, Practice/Performance	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations 2 X 50	Material: Examining elementary school mathematics learning. References: 1) Van de Walle, John A. 2007. <i>Elementary and Middle School Mathematics. (Translation by Suyono). Volumes 1 and 2. Jakarta: Erlangga 2) Musser, Gary L & Burger, William F. 1997. Mathematics for Elementary Teachers: A Contemporary Approach. Upper Saddle River, NJ: Prentice-Hall 3) 2013 Curriculum Mathematics subject. 4) Siswono, Tatag YE (2017). <i>Development and Design Research. Surabaya: PPS Surabaya</i> </i>	5%

5	Master and skilled in Problem Based Learning Planning for Elementary School	1. Able to plan learning using the Problem Based Learning model for SD2. Skilled in implementing Problem Based Learning for Elementary Schools	<p>Criteria:</p> <ol style="list-style-type: none"> 1.The selected questions have a score of 10 2.10 UTS questions 3.There are 10 UAS questions 4.Maximum value 100 <p>Form of Assessment : Portfolio Assessment</p>	1. Student Active Learning2. Project Base Learning3. Cooperative Learning4. Problem Base Learning 5. Discussion, Lecture and Question and Answer 2 X 50		<p>Material: Planning a Problem-Based Learning Model for Elementary Schools</p> <p>References: 1) <i>Van de Walle, John A. 2007. Elementary and Middle School Mathematics. (Translation by Suyono). Volumes 1 and 2. Jakarta: Erlangga 2)</i></p> <p>Musser, Gary L & Burger, William F. 1997. Mathematics for Elementary Teachers: A Contemporary Approach. Upper Saddle River, NJ: Prentice-Hall 3) 2013 Curriculum Mathematics subject. 4)</p> <p>Siswono, Tatag YE (2017). Development and Design Research. Surabaya: PPS Surabaya</p>	0%
6	Able to carry out planning and assessment processes in teaching mathematics in elementary schools	1. Able to plan the assessment process in the cognitive and psychomotor domains in accordance with K-13 in SD2. Able to carry out assessments during the mathematics learning process in elementary school based on the indicators prepared.	<p>Criteria:</p> <ol style="list-style-type: none"> 1.The selected questions have a score of 10 2.10 UTS questions 3.There are 10 UAS questions 4.Maximum value 100 <p>Form of Assessment : Participatory Activities, Practice/Performance</p>	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer Assignments and group presentations 2 X 50		<p>Material: Use of Technology and Media in implementing learning in elementary school 2. Presentation of media in learning</p> <p>Reference: <i>Reys, R., Lindquist, M., Lambdin, DV, & Smith, NL 2017. Helping children learn mathematics. John Wiley & Sons.</i></p>	5%
7	1) Creation and use of technology and media in implementing learning in elementary school	1. Students are able to use technology and media in implementing mathematics learning in SD2. Students are able to create and present simple media around the elementary school environment in mathematics learning in elementary school	<p>Criteria:</p> <ol style="list-style-type: none"> 1.The selected questions have a score of 10 2.10 UTS questions 3.There are 10 UAS questions 4.Maximum value 100 	1. Student Active Learning2. Project Base Learning3. Cooperative Learning4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignment and Presentation 2 X 50		<p>Material: Assessment planning in Mathematics Teaching in Elementary Schools 2. Implementation of assessment in Mathematics Teaching in Elementary Schools</p> <p>Library: <i>Mariana, Neni, et al. 2021. Virtual Development of the PGSD FIP Unesa Mathematics Cluster Laboratory. Research results report.</i></p>	0%

8	Mastering Multicultural Mathematics Learning for Elementary Schools according to the K-13 curriculum. Implementation of USS	1. Students master multicultural mathematics learning and can apply it to learning in elementary school. 2. Able to master concepts and procedures in multicultural mathematics learning in SD3. Implementation of the U.S.S	Criteria: 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100 Form of Assessment : Portfolio Assessment, Test	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignment and Presentation 2 X 50		Material: Mid-semester Evaluation / Mid-Semester Exam References: 2013 Curriculum for Mathematics subjects.	30%
9	Master conceptually and procedurally in reviewing elementary mathematics learning	1. Students master conceptually in reviewing elementary mathematics learning 2. Students master procedurally in reviewing elementary mathematics learning	Criteria: 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations 2 X 50		Material: Multicultural Mathematics Learning for Elementary Schools according to the K-13 curriculum 2. Multicultural mathematics learning in elementary school conceptually and procedurally References: Musser, Gary L & Burger, William F. 1997. <i>Mathematics for Elementary Teachers: A Contemporary Approach</i> . Upper Saddle River, NJ: Prentice-Hall	0%
10	Mastering the Development of Learning the Concept of Mathematical Numbers in Elementary School	1. Students are able to classify numbers in elementary school which include rational numbers, whole numbers and fractions 2. Students are able to calculate operations on whole numbers, whole numbers and fractions conceptually and procedurally 3. Students are able to apply it in elementary school learning about whole numbers and fractions 4. Students are able to apply operations related to whole numbers and fractions in the form of story problems in everyday life. Students are able to use and create appropriate media regarding number operations in SD6. Students are able to apply the concepts of KPK and FPB in solving daily life problems	Criteria: 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100 Form of Assessment : Practice / Performance	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations 2 X 50		Material: Examining elementary school mathematics learning Reader: Siswono, Tatag YE (2017). <i>Development and Design Research</i> . Surabaya: PPS Surabaya	5%

11	Mastering the Development of Learning Geometry and Measurement Concepts in Elementary School	<p>1. Students are able to conceptually and procedurally master flat shapes in elementary school (triangles, quadrilaterals, trapezoids, parallelograms and kites) 2. Students are able to conceptually and procedurally master spatial shapes in elementary school (prisms, pyramids and spheres) 3. Students are able to conceptually and procedurally master the area and perimeter of flat shapes in SD4. Students are skilled in applying elementary school learning related to flat surfaces and space 5. Students are able to master conceptually and procedurally the congruence and congruence of flat shapes at SD6. Students are able to master conceptually and procedurally about symmetry in SD7. Students are able to master conceptually and procedurally the transformation of flat shapes in elementary school (reflection, rotation and dilation) 8. Students are able to conceptually and procedurally master spatial nets at SD9. Students are able to master conceptually and procedurally the measurement of debit, speed and time in elementary school. 10 Students are able to master conceptually and procedurally social arithmetic (banks, postal items, money orders) in elementary school.</p>	<p>Criteria:</p> <ol style="list-style-type: none"> 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100 	<ol style="list-style-type: none"> 1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations <p>2 X 50</p>	<p>Material:</p> <ol style="list-style-type: none"> Numbers Arithmetic operations Application of integer numbers Application of integer operations in daily life Media on number operations Application of the concept of Corruption Eradication Committee and FPB <p>Reference:</p> <p>Siswono, Tatag YE (2017). <i>Development and Design Research</i>. Surabaya: PPS Surabaya</p>	0%
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12	Mastering conceptually and procedurally Development of Learning Statistical Concepts (Data Presentation and Processing)	1. Analyze data and its various types. 2. Master and be skilled at presenting data in the form of tables and diagrams in depth. 3. Master and be skilled in the concepts and procedures regarding frequency distribution and how to arrange it. 4. Mastering how to determine data centering measures (mean, mode and median) 5. Solving mathematical problems in statistics material and its application in everyday life. 6. Develop statistics learning (how to present data in the form of tables and diagrams, as well as data concentration measures) during workshops on preparing learning tools.	Criteria: 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100 Form of Assessment : Participatory Activities	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations 2 X 50	Material: flat shapes in elementary school (triangles, quadrilaterals, trapezoids, parallelograms and kites) space shapes in elementary school (prisms, pyramids and spheres) 3. area and perimeter of flat shapes in elementary school 4. flat planes and space 5. similarity and congruence of flat shapes in elementary school 6. symmetry in elementary school 7. transformation of flat shapes in elementary school (reflection, rotation and dilation) 8. nets of geometric shapes in elementary school 9. measurement of discharge and speed and time in elementary school 10. social arithmetic (banks, postal items, money orders) at SD Pustaka: <i>Siswono, Tatag YE (2017). Development and Design Research. Surabaya: PPS Surabaya</i>	5%
13	Mastering conceptually and procedurally Learning Development of Capita Selecta Concepts (Number patterns, algebra, logic and counting)	1. Master the theoretical concepts of capita selecta material (number patterns, algebra, trigonometry, logic) in depth. 2. Master conceptual and procedural knowledge in capita selecta material (number patterns, algebra, trigonometry, logic) in depth. 3. Solving mathematical problems on capita selecta material (number patterns, algebra, trigonometry, logic). 4. Master the concept of speed and discharge and solve related problems 5. Master the concept of counting techniques and be skilled at solving related problems	Criteria: 1. The selected questions have a score of 10 2. 10 UTS questions 3. There are 10 UAS questions 4. Maximum value 100 Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practices / Performance	1. Student Active Learning 2. Project Base Learning 3. Cooperative Learning 4. Problem Base Learning 5. Discussion, Lecture, and Question and Answer 6. Assignments and Presentations 2 X 50	Material: Data analysis Presentation of data in the form of tables and diagrams 3. Frequency distribution and how to arrange it. 4. Determining the size of data centralization 5. solving mathematical problems in statistics material 6. Developing statistics learning References: <i>Mariana, Neni, et al. 2021. Virtual Development of the PGSD FIP Unesa Mathematics Cluster Laboratory. Research results report.</i>	5%

14	Able to prepare mathematics learning tools in the form of low and high class lesson plans	1. Prepare or design a learning implementation plan (RPP) for elementary mathematics material based on the K-13 Curriculum for lower grades 2. Prepare or design a learning implementation plan (RPP) for elementary mathematics material based on the K-13 Curriculum for high school	<p>Criteria:</p> <ol style="list-style-type: none"> The selected questions have a score of 10 10 UTS questions There are 10 UAS questions Maximum value 100 <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p>	<ol style="list-style-type: none"> Student Active Learning Project Base Learning Cooperative Learning Problem Base Learning Discussion, Lecture, and Question and Answer Assignments and Presentations 	<p>Material: Capita Selecta, including Number Patterns, Algebra, Trigonometry, and Logic : Musser, Gary L & Burger, William F. 1997. <i>Mathematics for Elementary Teachers: A Contemporary Approach</i>. Upper Saddle River, NJ: Prentice-Hall</p>	0%
15	Implementing practices for developing mathematics learning in elementary schools for lower and higher grades	1. Skilled and able to carry out mathematics learning practices in elementary school for lower classes 2. Skilled and able to carry out mathematics learning practices in elementary school for high grades	<p>Criteria:</p> <ol style="list-style-type: none"> The selected questions have a score of 10 10 UTS questions There are 10 UAS questions Maximum value 100 <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	<ol style="list-style-type: none"> Student Active Learning Project Base Learning Cooperative Learning Problem Base Learning Discussion, Lecture, and Question and Answer Assignments and Presentations 	<p>Material: Developing mathematics learning tools in the form of low and high class lesson plans. Library: 2013 <i>Curriculum for Mathematics subjects</i>.</p>	50%
16					<p>Material: Final Semester Evaluation / Final Semester Examination References: 1) Van de Walle, John A. 2007. <i>Elementary and Middle School Mathematics</i>. (Translation by Suyono). Volumes 1 and 2. Jakarta: Erlangga 2) Musser, Gary L & Burger, William F. 1997. <i>Mathematics for Elementary Teachers: A Contemporary Approach</i>. Upper Saddle River, NJ: Prentice-Hall 3) 2013 <i>Curriculum Mathematics subject</i>. 4) Siswono, Tatag YE (2017). <i>Development and Design Research</i>. Surabaya: PPS Surabaya</p>	0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	11.67%
2.	Project Results Assessment / Product Assessment	51.67%
3.	Portfolio Assessment	15%
4.	Practice / Performance	11.67%
5.	Test	15%
		100%

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** 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.