



Universitas Negeri Surabaya
Faculty of Mathematics and Natural Sciences
Doctoral Study Program in Mathematics Education

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																										
Cognitive Psychology in Mathematics Education (Cognitive Psychology in Mathematics Education)	8400202041		T=2	P=0	ECTS=5.04	1	July 17, 2024																																										
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																											
			Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd.																																											
Learning model	Case Studies																																																
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																
	Program Objectives (PO)																																																
	PLO-PO Matrix																																																
		P.O																																															
	PO Matrix at the end of each learning stage (Sub-PO)																																																
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td rowspan="2" style="padding: 5px;">P.O</td> <td colspan="16" style="text-align: center; padding: 5px;">Week</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">7</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">9</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">11</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">13</td> <td style="padding: 5px;">14</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">16</td> </tr> </table>																P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																	
Short Course Description	The study of cognitive psychology concepts that support aspects of mathematics education includes cognitive neuroscience, attention and awareness, perception, memory models and processes, representation, organization and manipulation of knowledge, language, cognition and metacognition, as well as human intelligence and artificial intelligence. Lectures begin with an explanation of concepts and principles, assignments and discussions with students, as well as presentations using ICT with an assessment system including assignments (30%), participation (20%), mid-semester assessment (20%) and final semester assessment (30%).																																																
References	Main :																																																
	<ol style="list-style-type: none"> 1. Neshet, P. & Kipatrick, J. (Eds).. 1990. Mathematics and cognition . New York: Cambridge University Press. 2. Schoenfeld, A. H.. 1987. Cognitive science and mathematics education . Roulledge. 3. Skemp, R. R.. 2012. The psychology of learning mathematics . Roulledge. 4. Solso, R. L., Maclin, O. H., & Maclin, M. K.. 2008. Psikologi kognitif (terjemahan). Jakarta: Erlangga. 5. Sternberg, Robert J.. 2008. Psikologi Kognitif (terjemahan). Yogyakarta: Pustaka Pelajar 6. Von Glasserfeld, E.. 2003. Radical constructivism: a way of knowing and learning . New York: RoulledgeFalmer. 7. Von Glasserfeld, E. (Ed.). 2002. Radical constructivism in mathematics education . Dordrecht: Kluwer Academic Publishers. 																																																
	Supporters:																																																
Supporting lecturer	Prof. Dr. Dwi Juniati, M.Si. Dr. Siti Khabibah, M.Pd.																																																
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	Sub CPMK-1.1 Able to describe the basic concepts of cognitive psychology	Describe the Basic Concepts of Cognitive Psychology		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
2	Sub CPMK-1.1 Able to describe the basic concepts of cognitive psychology	Describe the Basic Concepts of Cognitive Psychology		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
3	Sub CPMK-2.1 Able to analyze developmental history, attention, perception, language.	Analyzes the history of development, attention, perception, language.		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
4	Sub CPMK-2.2 Able to understand the concept of Memory: Information processing, short term memory, long term memory, working memory, memory capacity	understand the concept of Memory: Information processing, short term Memory, long term Memory, working memory, memory capacity		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
5	Sub CPMK-2.3 Able to analyze the concepts of knowledge construction, accommodation, assimilation and those related to knowledge construction, understanding and types of understanding	Analyze the concepts of knowledge construction, accommodation, assimilation and those related to knowledge construction, understanding and types of understanding		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
6	Sub CPMK-2.4 Able to understand the concepts of thinking, critical thinking, creative thinking and related things	Understand the concepts of thinking, critical thinking, creative thinking and related ones		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
7	Sub CPMK-2.1 Able to understand the concept of reasoning, types of reasoning, and related matters.	Understand the concept of Reasoning, explain the types of reasoning, and related things		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
8	Midterm exam			2 X 50			0%
9	Sub CPMK-2.1 Able to explain metacognitive concepts.	explain metacognitive concepts.		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
10	Sub CPMK-3.1 Applying cognitive psychology concepts to design solutions to mathematics education problems	Analyzing cognitive psychology concepts to design solutions to mathematics education problems		Assignment 2 X 50			0%
11	Sub CPMK-3.2 Able to analyze aspects that influence learning, motivation and emotions.	Analyzing Aspects that influence learning, motivation and emotions.		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
12	Sub CPMK-3.3 Able to analyze articles related to problem solving, creativity and critical thinking.	Analyze articles related to problem solving, creativity, and critical thinking		Assignments, Lectures, Presentations and Discussions 2 X 50			0%

13	Sub CPMK-3.4 Able to apply a qualitative approach in research.	Describe triangulation and cultural studies and appropriate research designs.		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
14	Sub CPMK-3.5 Able to analyze articles related to mathematical literacy.	Analyzing mathematical literacy articles.		Assignments, Lectures, Presentations and Discussions 2 X 50			0%
15							0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
		0%

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.
- 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.
- 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.
- 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.