



MINISTRY OF HIGHER EDUCATION, SCIENCE, AND
TECHNOLOGY

UNIVERSITAS NEGERI SURABAYA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNDERGRADUATE PROGRAM OF MATHEMATICS EDUCATION

Ketintang Campus, Jalan Ketintang, C8 C9 Building, Surabaya 60231

Phone: +62 895335466373, email: s1-pmat@unesa.ac.id

Website: <https://pendidikan-matematika.fmipa.unesa.ac.id/>

Undergraduate Program of Mathematics

Module Handbook

Module Name:	Psikologi Pembelajaran Matematika Psychology of Mathematics Learning
Module Level:	Sarjana (S-1) / Undergraduate
Abbreviation, if applicable:	8420202186
Sub-heading, if applicable:	-
Course included in the module, if applicable:	-
Semester/term:	3 / Second year
Module Coordinator(s):	Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd.
Lecturer(s):	Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd. Dr. Siti Khabibah, M.Pd. Prof. Rooselyna Ekawati, Ph.D. Ika Kurniasari, S.Pd., M.Pd. Dr. Sugi Hartono, M.Pd. Yulia Izza El Milla, S.Pd., M.Pd.
Language:	Indonesia
Classification within the curriculum:	Compulsory course /elective studies
Teaching format/class hours per week during the semester	Teaching format: lectures using case-based learning, small-group discussions, presentations, analysis of mathematics learning situations, and case-study assignments. Class hours per week: 2×170 minutes = 340 minutes (5.67 hours), of which 2×50 minutes are lectures.
Workload:	16 weeks per semester consisting of: <ul style="list-style-type: none">• 2 hours lectures (2×50 minutes) per week,• 2 hours structured assignments (2×60 minutes) per week,• 2 hours independent study (2×60 minutes) per week, Total workload: $16 \times 2 \times 170$ minutes = 5,440 minutes = 90.67 hours = 3.18 ECTS*
Credit Point:	2 CU (3.18 ECTS)
Requirements:	N/A



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<p>Learning Goals :</p>	<p>Programme Learning Outcomes (PLO) addressed:</p> <p>PLO-7: Master pedagogical knowledge in teaching and assessment in line with transformative curriculum and technological developments, oriented towards realistic mathematics education and edupreneurial leadership.</p> <p>PLO-8: Demonstrate skills in designing, implementing, and evaluating adaptive and innovative technology-based mathematics learning with a realistic mathematics education perspective.</p> <p>PLO-10: Make data-based decisions in completing assigned responsibilities and evaluating the work carried out.</p> <p>Course Learning Outcomes (CLO): after completing this module, students are able to:</p> <p>CLO-1: Analyze problems related to motivation, reinforcement, and learning habits, and propose behaviorist approaches to improve engagement in mathematics learning. (PLO-7)</p> <p>CLO-2: Analyze mathematical learning difficulties associated with cognitive development, knowledge construction, and scaffolding, and propose appropriate cognitive/constructivist instructional responses. (PLO-7)</p> <p>CLO-3: Analyze learners' difficulties with abstract mathematical concepts, geometric reasoning, and problem solving, and design responsive instructional strategies. (PLO-8)</p> <p>CLO-4: Examine differences in mathematical thinking and intellectual functioning and develop varied instructional responses without reducing learners to fixed ability or learning-style labels. (PLO-8)</p> <p>CLO-5: Analyze the effects of values, culture, and social context on mathematics learning and develop inclusive, culturally relevant solutions supported by case evidence. (PLO-10)</p>
<p>Content:</p>	<p>The course examines mathematics learning problems from psychological perspectives. Topics include the formation of mathematical concepts and schemas; motivation, reinforcement, and learning habits; behaviorist theories (Skinner and Thorndike); cognitive and sociocultural theories (Piaget, Vygotsky, Bruner, and Gagné); characteristics of mathematical learning (Dienes and van Hiele); problem-solving processes (Pólya); differences in</p>



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mathematical thinking and intelligence (Guilford and Gardner); and interpersonal, emotional, cultural, and social influences on learning. Students analyze authentic or simulated mathematics classroom cases, select relevant psychological explanations, propose feasible and inclusive instructional responses, and present and reflect on case-study outputs.

**Study/exam
achievements**

- Students are considered competent and pass if the final score is at least 55 or C. The score comprises participatory activities (20%) and case-study/project products (80%), including the final project (20%), as specified in the SiDia course RPS.
- Final score is calculated as follows:

Week	Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)	Evaluation
1	CLO-1	PLO-7	5%
2	CLO-1	PLO-7	5%
3	CLO-1	PLO-7	6%
4	CLO-2	PLO-7	5%
5	CLO-2	PLO-7	6%
6	CLO-2	PLO-7	5%
7	CLO-2	PLO-7	6%
8	CLO-3	PLO-8	5%
9	CLO-3	PLO-8	6%
10	CLO-3	PLO-8	5%
11	CLO-3	PLO-8	5%
12	CLO-4	PLO-8	5%
13	CLO-4	PLO-8	6%
14	CLO-5	PLO-10	5%
15	CLO-5	PLO-10	5%
16	CLO-5	PLO-10	20%

- Final index is defined as follow:

Index	Converted Score	Score Range
A	4.00	$85 \leq A \leq 100$
A-	3.75	$80 \leq A- < 85$
B+	3.50	$75 \leq B+ < 80$



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	<table><tr><td>B</td><td>3.00</td><td>$70 \leq B < 75$</td></tr><tr><td>B-</td><td>2.75</td><td>$65 \leq B- < 70$</td></tr><tr><td>C+</td><td>2.50</td><td>$60 \leq C+ < 65$</td></tr><tr><td>C</td><td>2.00</td><td>$55 \leq C < 60$</td></tr><tr><td>D</td><td>1.00</td><td>$40 \leq D < 55$</td></tr><tr><td>E</td><td>0.00</td><td>$0 \leq E < 40$</td></tr></table>	B	3.00	$70 \leq B < 75$	B-	2.75	$65 \leq B- < 70$	C+	2.50	$60 \leq C+ < 65$	C	2.00	$55 \leq C < 60$	D	1.00	$40 \leq D < 55$	E	0.00	$0 \leq E < 40$
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D	1.00	$40 \leq D < 55$																	
E	0.00	$0 \leq E < 40$																	
Forms of Media	Slides, LCD projector, UNESA Learning Management System (LMS), Google Docs, Google Slides, Google Forms, Microsoft Word, PDF documents, classroom case materials, smartphones, and laptops.																		
Literature	<ol style="list-style-type: none">CAST. (2024). <i>CAST universal design for learning guidelines version 3.0</i>. https://udlguidelines.cast.org/Krutetskii, V. A. (1976). <i>The psychology of mathematical abilities in schoolchildren</i>. University of Chicago Press.National Academies of Sciences, Engineering, and Medicine. (2018). <i>How people learn II: Learners, contexts, and cultures</i>. The National Academies Press. https://doi.org/10.17226/24783Skemp, R. R. (1987). <i>The psychology of learning mathematics: Expanded American edition</i>. Lawrence Erlbaum Associates.Slavin, R. E., Madden, N. A., & Ross, S. M. (2026). <i>Educational psychology: Theory and practice</i> (14th ed.). Pearson.Woolfolk, A., & Usher, E. L. (2024). <i>Educational psychology: Active learning edition</i> (15th ed.). Pearson.Xie, Y., Zeng, F., & Yang, Y. (2024). A meta-analysis of the relationship between metacognition and academic achievement in mathematics: From preschool to university. <i>Acta Psychologica</i>, 249, Article 104486. https://doi.org/10.1016/j.actpsy.2024.104486																		
Note	Based on the Regulation of the Minister of Higher Education, Science, and Technology of the Republic of Indonesia Number 39 of 2025 on Quality Assurance in Higher Education, 1 credit unit (CU) corresponds to 45 hours of learning per semester. UNESA implements the workload as 170 minutes per week over 16 weeks, including midterm and final examinations. For Psychology of Mathematics Learning (2 CU), the total workload is $2 \times 170 \times 16 = 5,440$ minutes or 90.67 hours per semester, consisting of lectures,																		



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	structured assignments, and independent study. Based on UNESA's conversion of 1 CU = 1.59 ECTS, this course is equivalent to $2 \times 1.59 = 3.18$ ECTS.
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