Module designation	**Psychology of Mathematics Learning** **Indonesian title:** *Psikologi Pembelajaran Matematika* **Course code:** 8420202186
Semester(s) in which the module is taught	Semester 3 (Second year)
Person responsible for the module	**Coordinator:** Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd. **Teaching staff:** 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	Indonesian
Relation to curriculum	Elective
Teaching methods	Lectures using case-based learning, small-group discussions, presentations, analysis of mathematics learning situations, and case-study assignments. **Media and tools:** Slides, LCD projector, UNESA Learning Management System (LMS), Google Docs, Google Slides, Google Forms, Microsoft Word, PDF documents, classroom case materials, smartphones, and laptops.
Workload (incl. contact hours, self-study hours)	**(Estimated) total workload:** 2 CU × 170 minutes × 16 weeks = 5,440 minutes = 90.67 hours (≈ 3.18 ECTS) **Contact hours:** lectures, 2 × 50 minutes per week × 16 weeks = 26.67 hours (class hours per week: 340 minutes = 5.67 hours, including structured activities) **Private study including examination preparation:** structured assignments, 2 × 60 minutes per week × 16 weeks = 32.00 hours; independent study, 2 × 60 minutes per week × 16 weeks = 32.00 hours (total 64.00 hours)
Credit points	2 CU (3.18 ECTS) *1 CU = 170 minutes per week × 16 weeks = 45.3 hours; 1 ECTS = 28.48 hours (144 CU = 229 ECTS), so 1 CU = 1.59 ECTS (UNESA Rector's Decree No. 736/HK/KM/2023).*
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	**Programme learning outcomes (PLO) addressed:** • PLO-7: Demonstrate pedagogical knowledge in designing, implementing and evaluating mathematics learning. • PLO-8: Design, implement and evaluate mathematics learning using IT. • PLO-10: Make decisions based on data/information in completing tasks that are the student's responsibility and evaluating the work that has been done. **Course learning outcomes (CLO): after completing this module, students are able to:** • CLO-1: Analyze problems related to motivation, reinforcement, and learning habits, and propose behaviorist approaches to improve engagement in mathematics learning. (PLO-7) • CLO-2: Analyze mathematical learning difficulties associated with

<table>
<tr><td></td><td>cognitive development, knowledge construction, and scaffolding, and propose appropriate cognitive/constructivist instructional responses. (PLO-7)
• CLO-3: Analyze learners' difficulties with abstract mathematical concepts, geometric reasoning, and problem solving, and design responsive instructional strategies. (PLO-8)
• 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)
• 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)</td></tr>
<tr><td>Content</td><td>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 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.</td></tr>
<tr><td>Examination forms</td><td>Final score is calculated from the weekly assessment scheme below (CLO/PLO addressed and weight of each assessment):
<table>
<tr><th>Week</th><th>CLO</th><th>PLO</th><th>Weight (%)</th></tr>
<tr><td>1</td><td>CLO-1</td><td>PLO-7</td><td>5</td></tr>
<tr><td>2</td><td>CLO-1</td><td>PLO-7</td><td>5</td></tr>
<tr><td>3</td><td>CLO-1</td><td>PLO-7</td><td>6</td></tr>
<tr><td>4</td><td>CLO-2</td><td>PLO-7</td><td>5</td></tr>
<tr><td>5</td><td>CLO-2</td><td>PLO-7</td><td>6</td></tr>
<tr><td>6</td><td>CLO-2</td><td>PLO-7</td><td>5</td></tr>
<tr><td>7</td><td>CLO-2</td><td>PLO-7</td><td>6</td></tr>
<tr><td>8</td><td>CLO-3</td><td>PLO-8</td><td>5</td></tr>
<tr><td>9</td><td>CLO-3</td><td>PLO-8</td><td>6</td></tr>
<tr><td>10</td><td>CLO-3</td><td>PLO-8</td><td>5</td></tr>
<tr><td>11</td><td>CLO-3</td><td>PLO-8</td><td>5</td></tr>
<tr><td>12</td><td>CLO-4</td><td>PLO-8</td><td>5</td></tr>
<tr><td>13</td><td>CLO-4</td><td>PLO-8</td><td>6</td></tr>
<tr><td>14</td><td>CLO-5</td><td>PLO-10</td><td>5</td></tr>
<tr><td>15</td><td>CLO-5</td><td>PLO-10</td><td>5</td></tr>
<tr><td>16</td><td>CLO-5</td><td>PLO-10</td><td>20</td></tr>
</table></td></tr>
<tr><td>Study and examination requirements</td><td>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 index (grade conversion):</td></tr>
</table>

	<table><tr><th>Index</th><th>Converted score</th><th>Score range (A = final score)</th></tr><tr><td>A</td><td>4.00</td><td>85 ≤ A ≤ 100</td></tr><tr><td>A-</td><td>3.75</td><td>80 ≤ A < 85</td></tr><tr><td>B+</td><td>3.50</td><td>75 ≤ A < 80</td></tr><tr><td>B</td><td>3.00</td><td>70 ≤ A < 75</td></tr><tr><td>B-</td><td>2.75</td><td>65 ≤ A < 70</td></tr><tr><td>C+</td><td>2.50</td><td>60 ≤ A < 65</td></tr><tr><td>C</td><td>2.00</td><td>55 ≤ A < 60</td></tr><tr><td>D</td><td>1.00</td><td>40 ≤ A < 55</td></tr><tr><td>E</td><td>0.00</td><td>0 ≤ A < 40</td></tr></table>
Reading list	1. CAST. (2024). CAST universal design for learning guidelines version 3.0 . https://udlguidelines.cast.org/ 2. Krutetskii, V. A. (1976). The psychology of mathematical abilities in schoolchildren . University of Chicago Press. 3. National Academies of Sciences, Engineering, and Medicine. (2018). How people learn II: Learners, contexts, and cultures . The National Academies Press. https://doi.org/10.17226/24783 4. Skemp, R. R. (1987). The psychology of learning mathematics: Expanded American edition . Lawrence Erlbaum Associates. 5. Slavin, R. E., Madden, N. A., & Ross, S. M. (2026). Educational psychology: Theory and practice (14th ed.). Pearson. 6. Woolfolk, A., & Usher, E. L. (2024). Educational psychology: Active learning edition (15th ed.). Pearson. 7. Xie, Y., Zeng, F., & Yang, Y. (2024). A meta-analysis of the relationship between metacognition and academic achievement in mathematics: From preschool to university. Acta Psychologica, 249 , Article 104486. https://doi.org/10.1016/j.actpsy.2024.104486