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:	Reasoning and Proof Penalaran dan Pembuktian
Module Level:	Sarjana (S-1) / Undergraduate
Abbreviation, if applicable:	8420202153
Sub-heading, if applicable:	-
Course included in the module, if applicable:	-
Semester/term:	6 / Third Year
Module Coordinator(s):	Prof. Dr. Tatag Yuli Eko Siswono, M.Pd
Lecturer(s):	Prof. Dr. Tatag Yuli Eko Siswono, M.Pd Dr. Abdul Haris Rosyidi, S.Pd., M.Pd. Dr. Sugi Hartono, M.Pd
Language:	Indonesia
Classification within the curriculum:	~~Compulsory course~~/Elective studies
Teaching format/class hours per week during the semester	Teaching format: lectures, tutorial assignment, and individual Study/2 x 170 minutes = 340 minutes = 5.7 hours lectures
Workload:	16 weeks per semester consisting of: • 1 hour lectures (1 x 50 minutes) per week, • 1 hours assignments (1 x 60 minutes) per week, ➢ 1 hours individual study (1 x 60 minutes) per week, Total workload: 16x2x170 minutes = 5,440 minutes = 90.7 hours=3.1 ECTS*
Credit Point:	2
Requirements:	Foundation of Mathematics

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Learning Goals :	
	PLO-5: Possesses basic mathematical knowledge to solve mathematical problems and their applications in education.
	PLO-6: Masters the principles of mathematical knowledge to support mathematical thinking skills in solving mathematical problems.
	PLO-7: Master pedagogical knowledge in teaching and evaluation in accordance with transformative curriculum developments and technological developments oriented towards realistic mathematics education and edupreneur-leadership
Content:	Studying the meaning and benefits of proof, the types of reasoning used in the proof process and their characteristics, including deductive reasoning and inductive reasoning (analogy, generalization), types of proof in mathematics (proof, formal, informal, direct proof, contradiction, induction, and proof with examples and non-examples) and how to communicate proof through IT-based active learning
Study/exam achievements	• Students are considered competent and pass if the final score is at least 55 or C. • Final score is calculated as follows:

Week	Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)	Evaluation (%)
1	CLO-1	PLO-6	5
2	CLO-2	PLO-5	5
3	CLO-3	PLO-6	5
4	CLO-4	PLO-6	5
5	CLO-5	PLO-5	5
6	CLO-6	PLO-6	5
7	CLO-7	PLO-5	10
8	CLO-8	PLO-6	5
9	CLO-9	PLO-7	5
10	CLO-10	PLO-5	5
11	CLO-11	PLO-6	5

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12	CLO-12	PLO-6	5
13	CLO-13	PLO-6	5
14	CLO-14	PLO-6	5
15	CLO-15	PLO-6	5
16	CLO-16	PLO-6	15

- 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	$75 \leq B+ <80$
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	$0 \leq E <40$

Forms of Media	Slides and LCD projectors, whiteboard
Literature	1. Sundstrom, T. 2014. Mathematical Reasoning: Writing and Proof Version 2.0 California: Creative Commons 2. Brodie, K.(2009). Teaching mathematical reasoning in secondary school classrooms (Vol. 775). Springer Science & Business Media. 3. Nickerson, R. S. 2009. Mathematical reasoning : patterns, problems, conjectures, and proofs. New York: Psychology Press. 4. Reid, D. A., & Knipping, C. (2010). Proof in mathematics education. Research, learning and teaching. 5. Stylianou, D. A.,Blanton, M. L., & Knuth, E. J. (2010). Teaching and learning proof across the grades: A K-16 perspective. Routledge
Note	Based on the regulation of the minister of education and culture of Indonesia number 3 of 2020 concerning national higher education standards, it is state 1 CU equals to 170 minutes per week. Therefore, in one semester (16 weeks, including midterm a final

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	exam) 1 CU = 170 X 16 = 2.720 minutes or 45.3 hours. Therefore, workhours in 144 CU x 45.3 hours = 6.523,2 hours. Unesa decided that 1 ECTS with 144 CU, 6.523,2/229 ECTS = 28.48 hours, so that 1 CU = 1.59 ECTS