Module Description of Mathematical Logic and Set Theory

Module Name	:	Mathematical Logic and Set Theory
Module Level	:	Bachelor
Code, if applicable	:	23H01110203
Subtitle, if applicable	:	-
Courses, if applicable	:	Mathematical Logic and Set Theory
Semester(s) in which the module is taught	:	1 (First Semester)
Module coordinator(s)	:	Prof. Dr. Amir Kamal Amir, M.Sc.
Lecturer(s)	:	Prof. Dr. Budi Nurwahyu, MS. Prof. Dr. Amir Kamal Amir, M.Sc. Prof. Dr. Hasmawati, M.Si. Dr. Firman, S.Si.,M.Si.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Compulsory course in the first year for Bachelor Degree
Type of teaching/teaching method	:	Lecturing, Small Group Discussion, Collaborative Learning
Contact hours	:	150 minutes Lectures per week, 180 minutes Structured Assignments per week, and 180 minutes Independent Study per week
Workload	:	Total workload is 135 hours per semester which consists of 40 hours per semester for Lectures, 47.5 hours per semester for Independent Study, and 47.5 hours per semester for Structured Assignments
Credit points	:	3 (4.8 ECTS)
Requirements according to the examination regulations	:	Students are required to attend at least 80% of the total meetings which is recorded via the attendance menu at https://sikola-v2.unhas.ac.id/, complete all mandatory assignments, and obtain permission from the lecturer to participate in the examination.
Module objectives/intended learning outcomes	:	After completion of this module, CLO 1. students have a relatively deep understanding on the determination of the truth values of a statement including statements with quantifiers, understand logic rules and some inferential methods; CLO 2. students are able to understand the process for proving a statement logically, analytically and systematically; CLO 3. students are able to understand how to apply logic rules, inferential methods, proving methods to develop mathematics and its applications in other areas. The following is the mapping of the ILO and the CLO of this course:

	ILO 1	ILO 2	ILO 3
CLO 1	X		
CLO 2			X
CLO 3		X	

<table>
<tr><td>Content</td><td>:</td><td>This course is structured to develop the ability to think logically and think critically. This course does not emphasize the use or mastery of mathematical formulas, but rather trains and strengthens aspects of student mathematical logic. It is hoped that students understand the importance of mathematical knowledge not because they have to be proficient with numbers and just a number of quantitative formulas. The subject matter includes: Statement of Sentences, Sentence Truth Values, Logic Laws, some special forms of Statement, valid and invalid argument, Statement with quantifiers, Use of Logic in Some basic concepts of Mathematics, Methods of Proof, Boolean Algebra, and Algebra Set.</td></tr>
<tr><td>Study and examination requirements</td><td></td><td>Study and examination requirements:
● Students must attend 15 minutes before the class starts.
● Students must switch off all electronic devices.
● Students must inform the lecturer if they will not attend the class due to sickness, etc.
● Students must submit all class assignments before the deadline.
Students must attend the exam to get final grade.</td></tr>
<tr><td>Exams and assessment formats</td><td></td><td>The weight of each assessment component is 25% for Assignments; 40% for Report; 15% for Quizzes; 20% for Written Exam

Assignments assess students' ability to apply concepts independently, while Reports measure analytical and writing skills. Quizzes are used to test continuous understanding of weekly content. The Written Exam assesses comprehension and synthesis of all materials discussed during the semester. Altogether, these components account for 100% of the final grade.

Students are marked based on their percentage of points obtained and based on the following grade scale:
<table>
<tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversion Value</th></tr>
<tr><td>85 – 100</td><td>A</td><td>4.00</td></tr>
<tr><td>80 - <85</td><td>A-</td><td>3.75</td></tr>
<tr><td>75 - < 80</td><td>B+</td><td>3.5</td></tr>
<tr><td>70 - < 75</td><td>B</td><td>3.0</td></tr>
<tr><td>65 - < 70</td><td>B-</td><td>2.75</td></tr>
<tr><td>60 - < 65</td><td>C+</td><td>2.5</td></tr>
<tr><td>50 - < 60</td><td>C</td><td>2.00</td></tr>
<tr><td>40 - < 50</td><td>D</td><td>1.00</td></tr>
<tr><td>< 40</td><td>E</td><td>0.00</td></tr>
</table></td></tr>
<tr><td>Reading list</td><td></td><td>Main:
1. A. Weinstein, Logic, Set, and Number, second Edition, Wosworth Publishing Company, California, 1976.</td></tr>
</table>

		2. P.J. Hurley, A Concise Introduction to Logic, Edisi-3, Wadsworth Pub, 1988. 3. A.K. Amir, Struktur Berpikir Logis dan Sistematis. Depublish, 2018. 4. Charles C Pinter, "Set Theory", Dover Publication, Inc.2014 5. Seymour Lipschutz, "Set Theory and Related Topics" Schaum Outline Series, 1998 6. K.H. Rosen, Discrete Mathematics and Its Application, Edisi 4, McGraw-Hill, 1995.
Last revision date		July 28th, 2025