Module Description of Mathematical Statistics

Module Name	:	Mathematical Statistics
Module Level	:	Bachelor
Code, if applicable	:	23H01121303
Subtitle, if applicable	:	-
Courses, if applicable	:	Mathematical statistics
Semester(s) in which the module is taught	:	4 (Fourth Semester)
Module coordinator(s)	:	Dr. Firman, S.Si, M.Si.
Lecturer(s)	:	Dr. Firman, S.Si, M.Si, Jusmawati Massalesse, M.Si
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Compulsory course in the fourth semester for Bachelor degree in Mathematics
Type of teaching/teaching method	:	Lecturing, Small Group Discussion, Cooperative Learning, Self-Directed Learning
Contact hours	:	150 minutes lectures per week, 180 minutes structured activities 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 Learning and Teaching, 47.5 hours per semester for Self-Study, and 47.5 hours per semester for Structured Works
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 written examination.
Recommended prerequisites	:	Probability Theory
Module objectives/intended learning outcomes	:	After the completion of this module, the student will be able to: CLO 1. understand the basic principles of inferential statistics (estimation and hypothesis testing); CLO 2. analyze mathematical problems in a logical, analytical and systematically structured way. CLO 3. demonstrate knowledge of estimation and testing for large sample sizes. The following is the mapping of the ILO and the CLO of this course:

	ILO 1	ILO 3	ILO 4	ILO 7
CLO 1	X		X	
CLO 2		X		X
CLO 3		X	X	

<table>
<tr><td>Content</td><td>:</td><td>Mathematical statistics course introduces students to the fundamental concepts of mathematical statistics, focusing on statistical inference and its theoretical foundations. It begins with an overview of inference statistics, explaining how data can be used to draw conclusions about populations. The course covers sufficient statistics, which are essential for summarizing data without losing relevant information. Students will also learn about point estimation and confidence intervals, including methods for estimating population parameters and assessing their accuracy. Finally, the course delves into hypothesis testing theory, providing tools for making decisions based on statistical evidence.</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>Participants are marked based on their performance in: Quizzes (15%), Report (55%), Written Exam (30%)

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.

Final grades are determined based on the scale shown in the table below:

<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>1. Robert V. Hogg dan Allen T. Craig, 1995, Introduction to Matemathical Statistics, Fifth Edition.</td></tr>
</table>

		2. George Casella dan Roger L Berger, 2001. Statistical Inference, Duxbury & Thomas Learning 3. Wakerly, D., Mendenhall III, W. Scheaffer, R., 2008. Mathematical Statistics with Application, Ed. 7th, Thomson, Canada.
Last revision date	:	February 5th, 2025