Module Description of Machine Learning

Module Name	:	Machine Learning
Module Level	:	Bachelor
Code, if applicable	:	23H01130403
Subtitle, if applicable	:	-
Courses, if applicable	:	Machine Learning
Semester(s) in which the module is taught	:	5 (Fifth Semester)
Module coordinator(s)	:	Dr. Khaeruddin, M.Sc.
Lecturer(s)	:	Dr. Khaeruddin, M.Sc. Edy Saputra Rusdy , S.Si., M.Si. A. Muh. Amil Siddik, S.Si., M.Si.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Elective course in third year 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	:	Students have completed and taken the exams for Linear Algebra I, Algorithms and Programming, Mathematical Statistics
Module objectives/intended learning outcomes	:	After the completion of this module, the student will be able to: CLO 1. apply appropriate fundamental mathematical concepts to solve problems using Machine Learning; CLO 2. identify simple problems in real-world phenomena through data that can be analyzed and solved mathematically; CLO 3. develop machine-learning models with computational tools, interpret the solutions, and validate them using the available data;

<table>
<tr><td></td><td></td><td>The following is the mapping of the ILO and the CLO of this course:
<table>
<tr><th></th><th>ILO 1</th><th>ILO 2</th><th>ILO 4</th><th>ILO 6</th><th>ILO 8</th></tr>
<tr><td>CLO 1</td><td>X</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td>CLO 2</td><td></td><td>X</td><td>X</td><td></td><td></td></tr>
<tr><td>CLO 3</td><td></td><td></td><td></td><td>X</td><td></td></tr>
</table></td></tr>
<tr><td>Content</td><td>:</td><td>Machine Learning is an elective subject that provides understanding and development of expertise in the form of the fundamental ideas, intuitions, concepts, algorithms, and techniques that enable computers to become smarter through learning from data. The material covered includes supervised learning, unsupervised learning, reinforcement learning, and ensemble methods.</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 theory: Quizzes (15%), Report (55%), and Assignments (30%).

Assignments assess student's ability to apply concepts independently, while Reports measure analytical and writing skills. Quizzes are used to test continuous understanding of weekly content. 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>https://scikit-learn.org/stable/user_guide.html
https://alex.smola.org/drafts/thebook.pdf</td></tr>
</table>

		3. Géron, A. (2019). *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems* (2nd ed.). O'Reilly Media. 4. Patterson, J., & Gibson, A. (2017). *Deep learning: A practitioner's approach*. Sebastopol, CA: O'Reilly Media.
Last revision date	:	July 28th, 2025