Module Description of Linear Algebra I

Module Name	:	Linear Algebra I
Module Level	:	Bachelor
Code, if applicable	:	23H01110403
Subtitle, if applicable	:	-
Courses, if applicable	:	Linier Algebra I
Semester(s) in which the module is taught	:	2 (Second Semester)
Module coordinator(s)	:	Amir Kamal Amir
Lecturer(s)	:	Amir Kamal Amir, Andi Muhammad Anwar, Nur Erawati, Jusmawati Massalesse.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Compulsory course in first year for Bachelor degree in Mathematics
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.
Recommended prerequisites	:	Basic Mathematics 1

<table>
<tr><td>Module objectives/intended learning outcomes</td><td>:</td><td>After the completion of this module, the student will be able to:
CLO 1. Have good abilities in calculating linear algebra problems;
CLO 2. Have good abilities in calculating linear algebra problems;
CLO 3. Apply linear algebra concepts.

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 3</th><th>ILO 7</th></tr>
<tr><td>CLO 1</td><td>X</td><td></td><td></td><td></td></tr>
<tr><td>CLO 2</td><td></td><td>X</td><td></td><td></td></tr>
<tr><td>CLO 3</td><td></td><td></td><td>X</td><td>X</td></tr>
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<tr><td>Content</td><td>:</td><td>The Linear Algebra course introduces the fundamental concepts and methods essential for understanding linear structures in mathematics. The course begins with matrices and systems of linear equations, providing tools for solving and analyzing linear systems. It continues with the study of determinants and their properties, followed by Euclidean spaces and linear transformations, which form the basis for understanding mappings between vector spaces. Students also explore vector spaces, bases, and dimensions, which are central to abstract linear algebra. Furthermore, the course covers eigenvalues and eigenvectors, fundamental in both theoretical and applied mathematics, and concludes with the study of inner product spaces, where notions of length, angle, and orthogonality are rigorously defined. By the end of the course, students are expected to develop theoretical understanding necessary for further study in mathematics, engineering, and related fields.</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 assessed based on the following components: Written Exam (35%) Quizzes (15%), Assignments (45%), and Presentation (5%)

Assignments assess student's ability to apply concepts independently. Presentations evaluate oral communication, organization of ideas, and confidence in delivering academic</td></tr>
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<tr><td></td><td></td><td>material. 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>1. Horward Anton, Chris Rorres, 2005. Elementary Linear Algebra, Applications Version, Edition 12, John Wiley & Sons.
2. Nur Erawaty, 2023. Sifat Dasar Ruang Vektor. Unhas Press.
3. Seymour Lipschutz, Marc L. Lipson, 2004. Schaum’s Outline of Linear Algebra, Edisi 3, McGraw-Hill.</td></tr>
<tr><td>Last revision date</td><td>:</td><td>February 5th, 2025</td></tr>
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