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/

Module Name:	Elementary Linear Algebra Aljabar Linier Elementer
Module Level:	Sarjana (S-1) / Undergraduate
Abbreviation, if applicable:	8420203007
Sub-heading, if applicable:	-
Course included in the module, if applicable:	**-**
Semester/term:	3 / Second year
Module Coordinator(s):	Prof. Dr. Raden Sulaiman, M.Si
Lecturer(s):	Prof. Dr. Raden Sulaiman, M.Si. Prof. Rooselyna Ekawati, Ph.D. Dwi Nur Yunianti, S.Si., M.Sc. Dr. Sugi Hartono, M.Pd. Nina Rinda Prihartiwi, S.Pd., M.Pd. Yulia Izza El Milla, S.Pd., M.Pd. Novita Vindri Harini, M.Pd. Dr. Mukhtamilatus Sa'diyah, 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/3 x 170 minutes = 510 minutes = 8.5 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: 16x3x170 minutes = 8,160 minutes = 136 hours=4.8 ECTS*
Credit Point:	3
Requirements:	Elementary Number Theory Teori Bilangan Elementer

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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.
Content:	Studying Systems of Linear Equations (SLS), matrices, vector spaces, basis and dimension, inner product spaces, linear transformations, and eigenvalues and vectors. SLS solutions are studied through Gaussian and Gaussian-Jordan elimination methods, while matrices are focused on determinants and inverses. Vector spaces are discussed including subspaces, spanning sets, basis, dimension, and row/column spaces. In addition, Euclidean inner product spaces, linear transformations, and eigenvalues and vectors are also discussed with an emphasis on real eigenvalues.
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-5	3
2	CLO-1	PLO-5	3
3	CLO-2	PLO-5	3
4	CLO-3	PLO-5	3
5	CLO-3	PLO-6	10
6	CLO-4	PLO-5	3
7	CLO-4	PLO-6	3
8	CLO-4	PLO-5	15
9	CLO-4	PLO-6	3
10	CLO-4	PLO-6	3
11	CLO-4	PLO-5	20
12	CLO-5	PLO-6	10
13	CLO-6	PLO-6	3
14	CLO-6	PLO-6	3
15	CLO-7	PLO-6	10
16	CLO-7	PLO-6	5

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- Final index is defined as follow:

<table>
<tr><th>Index</th><th>Converted Score</th><th>Score Range</th></tr>
<tr><td>A</td><td>4.00</td><td>$85 \leq A \leq 100$</td></tr>
<tr><td>A-</td><td>3.75</td><td>$80 \leq A- < 85$</td></tr>
<tr><td>B+</td><td>3.50</td><td>$75 \leq B+ < 80$</td></tr>
<tr><td>B</td><td>3.00</td><td>$70 \leq B < 75$</td></tr>
<tr><td>B-</td><td>2.75</td><td>$65 \leq B- < 70$</td></tr>
<tr><td>C+</td><td>2.50</td><td>$60 \leq C+ < 65$</td></tr>
<tr><td>C</td><td>2.00</td><td>$55 \leq C < 60$</td></tr>
<tr><td>D</td><td>1.00</td><td>$40 \leq D < 55$</td></tr>
<tr><td>E</td><td>0.00</td><td>$0 \leq E < 40$</td></tr>
</table>

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<tr><td>Forms of Media</td><td>Slides and LCD projectors, whiteboard</td></tr>
<tr><td>Literature</td><td>

1. Anton, H.& Rorres, C. 2014. Elementary Linear Algebra (11th Edition) . John Wiley & Sons
2. Davis, H.T., & Thomson, K.T. 2000. Linear Algebra and Linear Operators in Engineering with Applications in Mathematica. Academic Press.
3. Andrilli, S., & Hecker, D. 2023. Elementary Linear Algebra (6th Edition). Academic Press.
4. Larson, R. & Falvo, D. C. 2009. Elementary Linear Algebra (6th Edition). Houghton Mifflin Harcourt Publishing Company

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<tr><td>Note</td><td>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 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</td></tr>
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