



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 546194 Email: dep-ike.mipa@ugm.ac.id Website: <http://dcse.fmipa.ugm.ac.id>

Bachelor in Computer Science

Telp : +62 274 546194

Email : prodi-s1-ilkom.mipa@ugm.ac.id

Website : <http://dcse.ugm.ac.id/>

MODULE HANDBOOK

Module name	Elementary Linear Algebra
Module level, if applicable	Bachelor
Code, if applicable	MII21-1001
Courses, if applicable	Elementary Linear Algebra
Semester(s) in which the module is taught	Fall (Odd)
Person responsible for the module	Dr. Nur Rokhman
Lecturer(s)	Dr. Nur Rokhman
Language	Bahasa Indonesia and English
Relation to curriculum	Bachelor degree, compulsory, 1 st semester.
Teaching methods	100 minutes of lectures and 120 minutes of structured activities per week.
Workload (incl. contact hours, self-study hours)	1. Lectures: $2 \times 50 = 100$ minutes (1.3 hours) per week. 2. Exercises and Assignments: $2 \times 60 = 120$ minutes (2 hours) per week. 3. Private study: $2 \times 60 = 120$ minutes (2 hours) per week.
Credit points	2 credit points
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.
Required and recommended prerequisites for joining the module	-

Learning outcomes and their corresponding PLOs	<p>After completing this module, a student is expected to:</p> <p>LO1 Students are able to model problems into a linear equations system and find solutions.</p> <p>LO2 Students are able to name and analyse the properties of matrices and vectors in general.</p> <p>LO3 Students understand the generalization process from two- and three-dimensional spaces to Euclidean space in general</p> <p>LO4 Students understand, are able to prove and use vector properties in Euclid Space to solve related problems.</p> <p>LO5 Students understand, are able to prove and use the properties of linear transformations between Euclidean spaces</p> <table border="1" data-bbox="630 619 1339 835"> <thead> <tr> <th>PLO</th> <th>LO1</th> <th>LO2</th> <th>LO3</th> <th>LO4</th> <th>LO5</th> </tr> </thead> <tbody> <tr> <td>Program</td> <td>PLO1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Learning</td> <td>PLO2</td> <td>√</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Outcome</td> <td>PLO3</td> <td></td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>(PLO)</td> <td>PLO4</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>PLO5</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	PLO	LO1	LO2	LO3	LO4	LO5	Program	PLO1					Learning	PLO2	√				Outcome	PLO3		√	√	√	(PLO)	PLO4						PLO5				
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Content	<p>Elementary Linear Algebra is a basic course in studying linear algebra and subsequent related subjects. This course introduces one of the mathematical models, namely a linear equations system using matrix tools including: matrix operations, determinants, and inverse matrices. Apart from that, geometry also motivates the definition of Euclid Space, which is the formulation of 2nd and 3rd dimensional spaces. After getting to know Euclid's Space, students are introduced to linear transformations between Euclidean spaces, characteristic vectors and characteristic values.</p>																																				
Study and examination requirements and examination forms	<p>In class group discussion, Quiz, Mid-terms examination and Final examination</p>																																				
Media employed	<p>LCD, Whiteboard, websites.</p>																																				
Assessments and evaluation	<p>LO1 problem 1 midterm exam (10%), exercise 1 (2%), exercise 2 (3%)</p> <p>LO2 problem 2 midterm exam (10%), problem 3 midterm exam (10%), exercise 3 (2%), exercise 4 (3%)</p> <p>LO3 problem 1 final exam (10%), exercise 5 (2%), exercise 6 (3%), exercise 7 (5%)</p> <p>LO4 problem 2 final exam (10%), exercise 8 (2%), exercise 9 (3%), exercise 10 (5%)</p> <p>LO5 problem 3 final exam (10%), exercise 11 (2%), exercise 12 (3%), exercise 13 (5%)</p>																																				

Reading list	<ol style="list-style-type: none">1. Anton, H., and Rorres, C, 2000, Elementary Linear Algebra, John Wiley and Sons Inc.2. Nicholson, 2001, Elementary Linear Algebra, McGraw-Hill Book Co.3. David C. Lay, 2012, Linear Algebra and Its Applications, 4 th edition, Addison Wesley.
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