Undergraduate Programme in Mathematics

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MODULE HANDBOOK

Module name	Elementary Linear Algebra
Module level, if applicable	Bachelor
Code, if applicable	MMM-1202
Subtitle, if applicable	-
Courses, if applicable	Elementary Linear Algebra
Semester(s) in which the module is taught	2nd (second)
Person responsible for the module	Chair of the Lab. Algebra
Lecturer(s)	Dr. Ari Suparwanto, M.Si. Dr. Diah Junia Eksi Palupi, M.S.
Language	Bahasa Indonesia
Relation to curriculum	Compulsory course in the first year (2nd semester) Bachelor Degree
Type of teaching, contact hours	150 minute lecture, 180 minute structured activities
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.
Credit points	3
Requirements according to the examination regulations	Students have taken Elementary Linear Algebra course (MMM-1202) and have an examination card where the course is stated on.
Recommended prerequisites	-
Module objectives/intended learning outcomes	As a result of completing this course, the student will be able: **CO1**. To solve and analyze systems of linear equations. **CO2**. To calculate and analyze matrix operations, vectors operation, determinant, invers of matrices and use their properties. **CO3**. To calculate and analyze dot product, cross product of vectors in 2-space and 3 space, their properties, and their application **CO4**. To understand concept of subspace, spanning, linear independence and bases and To understand linear transformations and their properties and to find standard matrices of the linear transformations. **CO5.** To find the eigen value and eigen vector of matrices.
Content	Topics: 1. System of Linear Equations 2. Matrices 3. Determinant 4. Vector in 2-Space and 3- Space 5. Euclidean Vector Spaces 6. Generator, linearly independent, basis, dimension 7. Linear Transformations 8. Eigenvectors and Eigen values

Study and examination requirements and forms of examination	The final mark will be weighted as follows:	
	No Assessment methods (components, activities)	Weight(percentage)
	1 Final Examination	40
	2 Mid-Term Examination	30

	3 Class Activities (Quiz, Homework, etc.) 30 The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.
Media employed	LCD Projector, Board, Laptop
Reading List	[1] Anton, H. and Rorres, C., 2005, *Elementary Linear Algebra*, John Wiley and Sons Inc., Drexel University [2] Nicholson., 2001, *Elementary Linear Algebra*, McGraw-Hill Book Co, University of Calgary [3] Indah Emilia Wijayanti, Sri Wahyuni, Yeni Susanti, 2015, *Dasar-Dasar Aljabar Linear dan Penggunaannya dalam Berbagai Bidang,* Gadjah Mada University Press, Yogyakarta. [4] David C. Lay, 2012*, Linear Algebra and Its Applications*, 4th Edition Linear Algebra and Its Applications, Addison Wesley. http://web.stanford.edu/class/nbio228-01/handouts/Linear%20Algebra_David%20Lay.pdf [5] Carl D. Meyer, 2000, *Matrix Analysis and Applied Linear Algebra*, SIAM http://saba.kntu.ac.ir/eecd/sedghizadeh/Ebooks/Matrix_Analysis.pdf

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		v		v	v				
CO 2		v		v	v				
CO 3		v		v					
CO 4	v					v			
CO 5				v	v				