Module Description/Course Syllabi

Study Programme: Mathematics (Master Degree)
Faculty of Mathematics and Natural Sciences
Universitas Andalas

1. *Course number and name*

MAT81101 Advanced Linear Algebra

2. *Credits and contact hours/Number of ECTS credits allocated*

3/4,53 ECTS

3. *Instructors and course coordinator*

Dr. Yanita

4. *Text book, title, author, and year*

Steven Roman, *Advanced Linear Algebra*, Springer, 3rd ed., 2007

5. *Recommended reading and other learning resources/tools*

1. Hugo, J. Woerdeman, *Advanced Linear Algebra*, 1st ed., Taylor & Francis Group, New York, 2016
2. Bruce, N. Cooperstein, *Advanced Linear Algebra*, 2nd ed., Taylor & Francis Group, New York, 2015

6. *Specific course information*

A. Brief description of the content of the course (catalog description)

In this course, mathematical concepts will be discussed in the form of mathematical definitions and properties in the form of entry and theorem related to linear algebra, which includes: vector and sub-room space, the basis of a vector space, eigenvalue and vector, diagonalization, and transformation linear and presentation matrix.

B. Prerequisites or corequisites

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C. Indicate whether a required or elective course in the program

Required

D. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

Second cycle degree

E. Year of study when the course unit is delivered (if applicable)

1st year

F. Semester when the course unit is delivered

Odd semester

G. Mode of delivery (face-to-face, distance learning)

Face to face, distance learning

7. *Intended Learning Outcomes*

ILO-2: Mastering mathematical concepts and applications (real analysis, advanced linear algebra, and statistics) in solving complex mathematical problems.

PI-1. Possess academic ethics.

PI-2. Demonstrate academic integrity.

ILO-3: Able to master one or several mathematical problems in analysis, algebra, applied mathematics, statistics and combinatorics.

PI-1: Able to identify theories used in related mathematical problems.

PI-2: Able to apply theories for advancement in related fields (advanced theory).

PI-3: Able to use advanced theory to solve related mathematical problems.

ILO-4: Mastering scientific techniques and developing them in solving research problems through multidisciplinary or interdisciplinary approaches.

PI-1: Able to apply mathematical techniques in research problem-solving.

PI-2: Able to analyse research problems.

PI-3: Able to formulate theorems/models and prove their validity.

PI-4: Able to use various mathematical software to solve complex mathematical problems.

8. *Course Learning Outcomes*

1. Able to solve problems and properties in the vector space
2. Able to solve problems and properties in the eigenvalues and eigenvectors
3. Able to solve problems and properties in a linear transformation
4. Able to solve problems and properties in the quotient and isomorphism quotient space

9. *Brief list of topics to be covered*

1. Vector Space
2. Eigenvalues and Eigenvectors
3. Linear Transformation

10. Learning and teaching methods

Directed learning

11. Language of instruction

Bahasa Indonesia

12. Assessment methods and criteria

Summative Assessment:

1. Tasks: 20%
2. Quiz: 20%
3. Mid Semester: 30%
4. Final Semester: 30%

Formative Assessment:

1. Thumb up and thumb down

2. Minutes paper