SYLLABUS CONTINUATION LINEAR ALGEBRA

DEPARTEMENT : Education of Mathematics Faculty : FPMIPA

A. Identity :

Name : Continuation Linear Algebra

Code : MT413

Wight : 3 SKS

Semester : 7 (Seven)

B. Purpose :

After following this lecturing student is expected to earns : comprehends again understanding of matrix and linear transformation, matrix and linear transformation to use in finalizing problems, comprehends understanding of theorem spectral and quadratic form, comprehends understanding of canonic-form Jordan, and has knowledge to be able to apply linear transformation concept, theorem Spectral, quadratic form and canonic-form Jordan at problems related to other mathematics sciences or sciences.

Prerequisite :

Student has followed subject matter of Linear Algebra

Reference :

Smith, L., 1998, Linear Algebra, Third Edition, Spinger, New York

Valenza, R. J., 1993, Linear Algebra An Introduction to Abstract Mathematics, Spinger-Verlag, New York.

C. Topic and Subtopik :

No	Topic	Subtopic
1	Introduction	a. Linear Transformations and Matrices in R^3 b. Matrices and Their Algebra c. Special Types of Matrices d. Exercises
2	Representing Linear Transformations by Matrices	a. Projections b. Nilpotent Transformations c. Cyclic Transformations d. Exercises
3	Systems of Linear Transformations	a. Existence Theorems b. Reduction to Echelon Form c. The Simplex Method

		d. Exercises
4	Inner Product Spaces	a. Scalar Products b. Inner Product Spaces c. Isometries d. The Riesz Representation Theorem e. Legendre Polynomials f. Exercises
5	The Spectral Theorem and Quadratic Forms	a. Selft-Adjoint Transformationa b. The Spectral Theorem c. The Proncipal Axis Theorem for Quadratic Form d. A proof of the Spectral Theorem for Quadratic Forms e. Exercises
6	Jordan Canonical Form	a. Invariant Subspaces b. Nilpotent Transformations c. The Jordan Normal Form d. Square Roots e. The Hamilton-Catley Theorem f. Inverses g. Exercises

Note. : *) is not studied in detail (as prerequisite matter)

OUTLINE MT413 CONTINUATION LINEAR ALGEBRA (3 SKS)

No	Topic	Minggu	Pertemuan Ke	Subtopic
1	Introduction	1	1	a. Linear Transformations and Matrices in R^3 b. Matrices and Their Algebra c. Special Types of Matrices d. Exercises
2	Representing Linear Transformations by Matrices	2 3	2 3	a. Projections b. Nilpotent Transformations c. Cyclic Transformations d. Exercises
3	Systems of Linear Transformations	4 5	4 5	a. Existence Theorems b. Reduction to Echelon Form c. The Simplex Method d. Exercises
4	Inner Product Spaces	6 7	6 7	a. Scalar Products b. Inner Product Spaces c. Isometries d. The Riesz Representation Theorem
5	Mid term test	8	8	
		9	9	e. Legendre Polynomials f. Exercises
6	The Spectral Theorem and Quadratic Forms	10 11	10 11	a. Selft-Adjoint Transformationa b. The Spectral Theorem c. The Proncipal Axis Theorem for Quadratic Form
7		12	12	d. A proof of the Spectral Theorem for Quadratic Forms e. Exercises
8	Jordan Canonical Form	13 14 15	13 14 15	a. Invariant Subspaces b. Nilpotent Transformations c. The Jordan Normal Form d. Square Roots e. The Hamilton-Catley Theorem f. Inverses g. Exercises
9	Final test			

Evaluasi :

1. Individual duty
2. Group duty
3. Group/individual presentation
4. Mid test

5. Final test

References :

Smith, L., 1998, Linear Algebra, Third Edition, Spinger, New York

Valenza, R. J., 1993, Linear Algebra An Introduction to Abstract Mathematics, Spinger-Verlag, New York.