科目ナンバリング	U-LAS10 10032 LE55				
授業科目名<英訳>	Linear Algebra A-E2 [For non-science majors] Linear Algebra A-E2 [For non-science majors]	担当者所属職名・氏名	数理解析研究所 講師　　上田　福大		
群	自然科学科目群	分野(分類)	数学(基礎)	使用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・開講期	2026・前期	曜時限	木4	配当学年	全回生	対象学生	全学向

[授業の概要・目的]

The rapid progress of computers has made it possible to analyze various social and natural phenomena using mathematical methods, and the importance of these methods is increasing.
This course is designed to provide liberal arts students with basic knowledge of linear algebra as a basis for learning such mathematical methods.
The course does not require high school mathematics for students aspiring to be scientists and engineers (high school mathematics III) but is designed so that students who have taken only high school mathematics courses for liberal arts can understand its content.
In Linear Algebra A [For non-science majors], students learn the basics of vectors and matrices.

[到達目標]

The objective of Linear Algebra A [For non-science majors] is to familiarize students with vectors, matrices, and linear systems of linear equations.

[授業計画と内容]

This course will cover the following subjects.
There will be 15 lessons, including feedback.
The order of lectures is not fixed but will be decided by the lecturer according to the lecturer's lecture policy and the students' background and understanding of the subject. Real vectors and matrices will be mainly covered.

1. Plane vectors and matrices of order two (Calculation of plane vectors and matrices, inner product, inverse matrix, Cayley-Hamilton theorem, linear transformations of the plane (rotation, reflection), linear systems and matrices, determinant) [3-4 weeks]
2. Vectors and matrices operation (linear combination, sum, scalar multiplication, product, linear maps, and matrices) [2-3 weeks]
3. Elementary transformations and linear systems (elementary transformations, staircase matrices, factorials, regular matrices, inverse matrices, solving linear systems, linear independence, *solution structures) [6-8 weeks]
4. #Determinant (definition and properties of determinant (elementary transformations, product, relation to transpose, substitution, and sign), expansion of determinant, Cramer's rule) [1-2 weeks]
5. Feedback [1 week]

Items marked with an asterisk (*) will be covered if time permits.
Part of subjects marked with # will be given in this class or all of them will be moved to the autumnal course, depending on the progress of the class.
In addition to lectures on the above topics, there will be exercises (in-class exercises or homework) related to the topics.

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[履修要件]

Students are assumed to have a good understanding of high school mathematics except calculus.

[成績評価の方法・観点]

Students will be evaluated primarily on their performance in the final examination. The student's performance in exercises and homework may also be taken into account. The details of the evaluation system will be explained by the lecturer in the first lecture.

[教科書]

Instructions on the textbook will be given in class. For those topics for which no appropriate textbook is available, printed or electronic materials will be provided by the lecturer.

[参考書等]

（参考書）
授業中に紹介する

[授業外学修（予習・復習）等]

In order to learn mathematics, it is necessary to try to solve the exercises on your own, in addition to preparing and reviewing the lectures.

[その他（オフィスアワー等）]

[主要授業科目（学部・学科名）]