

Linear Algebra

Syllabus Number 3F113
Basic Major Subjects
Requisites 2 credit
KUROSAWA, Yoshio

1. Course Description

This course relates to numerical calculations, vibration, robotics, etc. Specifically, the following themes are taught.

Elementary operations of vectors, inner product and outer product of vectors, operations of matrix, determinant, cofactor matrix, inverse matrix, solution of simultaneous linear equations using determinant, eigenvalue and eigenvector, diagonalization of matrix, etc.

In this class, it acquires knowledge, technology and ability about diploma policy 2.

2. Course Objectives

Linear algebra is a field of mathematics used as the foundation when studying natural science and engineering with calculus. This course aims to have the students master the basic knowledge of linear algebra, and to provide training in developing problem solving skills.

3. Grading Policy

- Term-end examination : 65%
- Short examination : 20%
- Print and the problem to have let out while lecturing : 15%

Students will not be evaluated when they are not attending lectures more than 2/3. Small test will be returned after grading and will be explained during lecture. Answers will be upload to LMS.

4. Textbook and Reference

Textbook

Shigeru Ishihara et al basics of science and technology Linear algebra Shokabo
ISBN978-4-7853-1093-6

5. Requirements(Assignments)

Make preparation which takes the following course by solving the exercises - the exercises in the textbook and so on. It carries the photograph of the writing of each time on the blackboard on LMS until lecture in the next time, confirm and review contents beforehand.

Please prepare and review the lecture for about 3 hours each time.

6. Note

If you're absent from lecture, please study and revise the topics taught on that day.

7. Schedule

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|------|--|
| [1] | Sum, difference, constant, inner product of vector |
| [2] | Outer product of vector |
| [3] | Sum, difference, product of matrix |
| [4] | Transposed matrix, symmetric matrix, skew-symmetric matrix, inverse matrix |
| [5] | Calculation of determinant |
| [6] | Property of determinant |
| [7] | Calculation of determinant by cofactor expansion |
| [8] | Inverse matrix is calculated by cofactor matrix |
| [9] | Short examination, solution of the coalition linear equation |
| [10] | Commentary of the short examination and summary of the first half |
| [11] | Rank of matrix, solution of inverse matrix by method of elimination |
| [12] | Linear independence, linear dependence |
| [13] | Linear transformation |
| [14] | Eigenvalue and eigenvector |
| [15] | Diagonalization of matrix |