Linear Algebra

Syllabus Number 1A203
Basic Major Subjects
Elective Requisites 2 credit

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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 basics of science and technology Linear algebra Shokabo
ISBN978-4-7853-1093-6

5. Requirements(Assignments)

Each blackboard photos will be uploaded on the LMS until the next lecture, so please check the content and review it. In addition, please prepare and review the exercises in the scope of 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

[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