Applied Mathematics2

Syllabus Number 1A302
Special Subjects
Elective 2 credit
KUROSAWA, Yoshio

1. Course Description

Students will learn about Laplace transformation, and the application to the differential equation, Fourier series and the Fourier transformation. First, the foundations of Laplace transformation learned by applying mathematics 1 are reviewed, and the method of application to a differential equation is studied. Next, the foundations of Fourier series are taught. Finally, the meaning of Laplace transformation is explained.
In this class, it acquires knowledge, technology and ability about diploma policy 2 and 3.

2. Course Objectives

The objective of this course is to understand the Laplace transformation, Fourier series, Fourier transformation and to be able to utilize them in related subjects.
Related subjects：Vibration, control engineering, etc.

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
Yoshihiro Tashiro The mathematics of the engineering department Applied mathematics Morikita Publishing Co., Ltd. ISBN978-4-627-04951-2

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.
Also, do preparation - the review of the lecture schedule range each time for about 3 hours.

6. Note

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

7. Schedule

[1] Basics law of Laplace transform
[2] Law of differential, law of differential of image, law of integral
[3] Law of integral of image, law of shifting, law of convolution
[4] Inverse Laplace transform
[5] Initial value problem of first order differentiation equation
[6] Initial value problem of second order differentiation equation
[7] Initial value problem of second order differentiation equation for constant coefficients
[8] Simultaneous differentiation equation
[9] Short examination, what is Fourier series?
[10] Commentary of the short examination and summary of the first half
[11] Fourier coefficient
[12] Calculation of Fourier coefficient
[13] Fourier sine / cosine coefficient
[14] Complex Fourier series
[15] What is Fourier transform?