

# Applied Mathematics1

Syllabus Number

1A301

Special Subjects

Elective 2 credit

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## 1. Course Description

Separation of variables, homogeneous, linear and exact differential equation of first order will be studied.

Linear differential equation of second order with constant coefficients.

Laplace transform etc.

During lecture, students will acquire knowledge, technology, and ability of diploma policy 2 or 3.

## 2. Course Objectives

This course aims to provide exercises in the fundamentals of the differential equation, and practical problem solving skills. Further, finding the solution to a differential equation using Laplace transform is studied.

## 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. 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 Calculus  
Morikita Publishing Co., Ltd. ISBN978-4-627-04932-1

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

## 5. Requirements(Assignments)

Review the calculus beforehand.

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

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|------|--|
| [1]  | What is the differential equation?   |
| [2]  | Differential equation of first order ( variable separation form )                          |
| [3]  | Differential equation of first order ( homogeneous form )                                  |
| [4]  | Linear differential equation of first order  |
| [5]  | Linear differential equation of first order ( question practice )                          |
| [6]  | Differential equation of the exact differential form                                       |
| [7]  | Differential equation of the exact differential form using the integral integrating factor |
| [8]  | Short examination  |
| [9]  | Commentary of the short examination and summary of the first half                          |
| [10] | Differential equation of second order (form that x is not included in)                     |
| [11] | Differential equation of second order for constant coefficients ( homogeneous form )       |
| [12] | Differential equation of second order for constant coefficients                            |
| [13] | What is Laplace transform?   |
| [14] | Inverse Laplace transform  |
| [15] | Solution method of the differential equation using Laplace transform                       |