Basic Mathematics

1. Course Description

Students will learn the following contents:
(1) How simple power is generalized to exponential function.
(2) How the index representing the number of digits has been generalized to a logarithmic function.
(3) How does the relationship between the angle and the side of the right triangle transform into a trigonometric function of a wavy graph.
Learn and understand in order, and make it practical by using the problem solving exercises.
Although this lesson is mainly lecture form, exercises are practiced in pairs, and everyone is required to present their answers.
In this lesson, you will acquire the knowledge, techniques and attitudes on the degree awards policy DP 4.

2. Course Objectives

Students can acquire the exponential functions, logarithmic functions, and basic knowledge of trigonometric functions that are constantly used in natural science and engineering. Students can explain the solution of computational problems. In addition, we aim to acquire the foundation of how to use it. Also, one of the goals is to increase computing capacity through problem solving exercises.

3. Grading Policy

We will evaluate by the final exam (80%) quiz (20%).
In addition, we will explain the answer after the exam and quiz. An example of the answer is shown in LMS.

4. Textbook and Reference

Textbook
Kenji Ueno supervised edited by Engineering mathematics teaching material research group Engineering mathematics text series basic mathematics　Mori Kita Publishing ISBN 978-4-627-05711-1
Reference
Yoshihiro Tashiro　Basic mathematics of engineering　Mori Kita Publishing ISBN 978-4-627-04912-3
Mathematics I and Mathematics II textbooks used in high school

5. Requirements(Assignments)

Please read the lesson content posted on LMS. Please read through the applicable range in the textbook, and understand theorems, official etc. Please solve the example especially and prepare carefully for the next class. In addition, since almost every homework assignment will be shown, please finish them by next lesson. Approximately 1 hour for preparation, 2 hours for assignment and review.

6. Note

We conduct quizzes in the 8th meeting and check the understanding level in the middle of the course. In addition to using LMS as an independent learning support, we will implement the Mobile-MARS test and questionnaire function as an interactive class as appropriate.

7. Schedule

[1]   Calculation of number and its calculation, settlement
Preparation: To read through textbooks P1 to 20 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture Solve P13, P21 and understand the solution again.

[2]   Division of formula, equation
Preparation: To read through textbooks P22 - 36 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture Solve P29, P37 and 38 and understand the solution again.

[3]   Aggregation and logic
Preparation: To read the textbooks P39 to 53 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture Solve the problems P54, 55 and understand the solution again.

[4]   Quadratic function
Preparation: To read the textbook P 56 - 68 by solving an example, check the theorem, the official, etc., and solve the example.
Review: Solving exercises in the scope of lecture Solve P62, P69 and understand the solution again.

[5]   Functions and Graphs
Preparation: To read through the textbooks P70 - 83 by solving examples, check theorems, formulas, etc. and solve the examples.
Review: Solving exercises in the scope of lecture solve the problems P84, P85 and understand the solution again.

[6]   Exponential
Preparation: To read through the textbooks P86 to 94 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture Solve P 95 and understand the solution again.

[7]   Log function
Preparation: To read through the textbooks P96 to 105 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture Solve the problems P106 and 107 and understand the solution again.

[8]   Sine and cosine, and quiz
Preparation: To read through textbooks P108-120 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture Solve the problem P121 and understand the solution again.

[9]   Basic properties of trigonometric functions and equations / inequalities
Preparation: To read through the textbooks P122 - 131 by solving examples, check theorems, formulas, etc. and solve the examples.
Review: Solving Exercises in the Lecture Scope Solving P132 and understanding the solution again.

[10]   Additive theorem of trigonometric functions
Preparation: To read the textbooks P133 ~ 140 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving exercises in the scope of lecture solve the problem P141 and understand the solution again.

[11]   Application to triangle
Preparation: To read the textbooks P 142 ~ 150 by solving examples, check the theorems, formulas, etc. and solve the example.
Review: Solving exercises in the scope of the lecture solve the problems P151, P152 and understand the solution again.

[12]   Point and straight line
Preparation: To read the textbooks P153 - 162 by solving examples, check theorems, formulas, etc. and solve the example.
Review: Solving exercises in the scope of lecture solve the problem P 163 and understand the solution again. Review: to understand the contents of the lecture range again based on the LMS teaching materials

[13]   Curve on the plane, area
Preparation: To read the textbook P164 ~ 188 by solving an example, check the theorem, the official, etc. and solve the example.
Review: Solving exercises in the scope of the lecture solve the problems P 184, P 189 and 190 and understand the solution again.

[14]   Number Processing
Preparation: To read the textbooks P191 ~ 201 by solving examples, check theorems, formulas, etc. and solve examples.
Review: Solving Exercise Practice Question P202 to understand the solution again.

[15]   Test, summary