# Calculus 2

Syllabus Number 3F115
Basic Major Subjects
Requisites 2 credit
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1. Course Description

This course includes the following contents.
1. Single variable functions (trigonometric function, logarithm function and exponential function)
2. Differential of the single variable function
3. Integral of the single variable function
4. Multi-variable function
5. Partial differential of the multi-variable function
6. Integral of the multi-variable function
This course will be gain knowledge and method related to DP1.

2. Course Objectives

Calculus is a fundamental learning in science and engineering. It plays an important role to understand physics, aerospace engineering, and even economics. Since it is related to the course of differential equations in the next semester, both memorizing the calculus formulas and solving the basic problems in the textbook are essential works. The purpose of this course is to understand both differential and integral formulas followed by to master the calculus by the intensive exercise.

3. Grading Policy

Homework (10%) mid-term examination (30%) and final examination (60%), Homework will be returned after checking. Detail solutions of homework will be shown in LMS.

4. Textbook and Reference

Textbook
M.Kaminaga and I.Fujita Keisanryoku wo tukeru Bibunnsekibunn Uchidarouhousya ISBN978-4-7536-0031-1

5. Requirements(Assignments)

Student must pre-study textbook (1 hour). Homework should be handed in every weeks. Since problems are shown in textbook, they should be answered by student (2 hours).

6. Note

7. Schedule

[1] Single variable functions 1: Exponential function and logarithm function
[2] Single variable functions 2: Trigonometric function and inverse trigonometric function
[3] Differential of the single variable function1: Limit of functions and differential function
[4] Differential of the single variable function 2: Differential of composite and inverse functions
[5] Differential of the single variable function 3: L'Hôpital's rule, Taylor expansion
[6] Differential of the single variable function 4: Characters of variable functions and their graphs
[7] Integral of the single variable function 1: Indefinite integral, integration by parts and integration by substitution
[8] Mid-term examination and summaries
[9] Integral of the single variable function 2: Integral of rational and irrational functions
[10] Integral of the single variable function 3: Definite integral, area, volume of body of rotation, and length of span
[11] Partial differential of the multi variable function 1: Multi variable function, partial differential, partial differential of composite function
[12] Partial differential of the multi variable function 2: Partial differential of implicit function, extreme value of two variable function
[13] Integral of the multi variable function 1: Repeated integral
[14] Integral of the multi variable function 2: general integral of multi variable-function
[15] Integral of the multi variable function 3: Transformation of variables, polar coordinate transformation and its integral