# Calculus I

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| **Registration Code** | 0064511 | **Credits** | 2.0 |
| **Course Category** | Sciences Basic | | |
| **Term (Semester) / Day / Period** | G-I (1st year, Fall Semester) / Thu. / 5 (16:30～18:00) | | |
| **Instructor** | RICHARD Serge | | |
| **Target Schools (Programs)** | Hu(J)・La(S)・Ec(S)・Sc(P・C・B)・En(C・Au)・Ag(B) | | |

**●Goals and Objectives of the Course**

Analysis is the field of mathematics that describes and analyzes quantitative changes, and the central methods are differential and integral calculus. These methods are essential techniques in natural science, and have recently found increasing applications also in social sciences.
The aim of the first half of this one-year course is to provide a solid understanding of functions of one real variable. The students will become familiar with the various tools necessary for the analysis of such functions and for their applications.

**●Course Prerequisites**

Some basic knowledge on calculus from high school is assumed, including differentiation and integration of polynomial functions.

**●Course Contents/Plan**

1. Limits and continuity: Basic properties of limits of sequences and functions, continuous functions and their basic properties, maxima and minima, asymptotic properties of functions.
2. Differentiation: Basic properties of the derivative and its interpretation, mean value theorem, higher derivatives, Taylor series.
3. Integration: Riemann integral and its properties, improper integrals, the fundamental theorem of calculus.

**●Course Evaluation Methods**

The final grade will be determined by quizzes (30%), the midterm (30%) and a final exam (40%). The grading scale will be A+, A, B, C, C-, F. This course uses the course withdrawal system. It is necessary to submit a Course Withdrawal Request Form when the student has no intention of finishing the course during the semester.

**●Notice for Students**

Students are expected to read their notes, and to be familiar with the content of the previous lecture of Calculus I before attending the next lecture.

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| **Textbook** | Free reference books and lecture notes are available on the website of the course |
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| **Reference website** | http://www.math.nagoya-u.ac.jp/~richard/fall2020.html |
| **Message** | Visit the website before the first lecture for updated information |