Calculus I

Undergraduate / Graduate	Undergraduate	Registration Code	0064511
Course Category	Sciences Basic	Credits	2.0
Term (Semester) / Day / Period	G-I (1st year, Fall Semester) / Thu. / 5 (16:30～18:00)		
Instructor	Richard Serge		
Contact e-mail of the Instructor	richard@math.nagoya-u.ac.jp		

●**Goals 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. Our goal is to learn the fundamental theory at the root of all these applications.

●**Objectives of the Course**
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 Content or 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 Prerequisites and Related Courses**
Some basic knowledge on calculus from high school is assumed, including differentiation and integration of polynomial functions. Students are encouraged to attend the related Math Tutorial Ia.

●**Course Evaluation Method and Criteria**
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.

●**Study Load (Self-directed Learning Outside Course Hours)**
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.

●**How to Respond to Questions**
By email.

●**Notice for Students**
Check the website mentioned below for updated information. The lectures will be provided in a classroom and/or on Zoom depending on the situation.

Textbook	Free reference books and lecture notes will be available on the website of the course.
Reference Book	Free reference books will be available on the website of the course.
Reference website	http://www.math.nagoya-u.ac.jp/~richard/fall2021.html