Special Mathematics Lecture
(differential equations and dynamical systems)

Undergraduate / Graduate	Undergraduate	**Registration Code**	0063611
Course Category	Sciences Basic	**Credits**	2.0
Term (Semester) / Day / Period	G-I (1st year, Fall Semester) / Wed. / 6 (18:15～19:45)		
Instructor	Richard Serge		
Contact e-mail of the Instructor	richard@math.nagoya-u.ac.jp		

●Goals of the Course
Differential equations and dynamical systems are playing an essential role in many research fields, and in particular for describing the evolution of systems. Our goal is to provide the necessary background information for understanding these evolutions and their asymptotic behaviors. The presentation will be accessible to all students, independently of their major.

●Objectives of the Course
Study the basic abstract theory of differential equations and dynamical systems, and discuss some applications according to the interest and to the motivation of the students.

●Course Content or Plan (tentative)
First-order and second-order differential equations
Linear systems of first-order differential equations
Planar systems and phase portraits
Nonlinear systems
Bifurcation theory
Discrete dynamical systems
Chaos

●Course Prerequisites and Related Courses
Basic knowledge on calculus and linear algebra, as provided in Calculus I & II and in Linear algebra I & II. Motivated 1st year students can also attend without these prerequisites but after a discussion with the instructor.

●Course Evaluation Method and Criteria
The final grade will be based on the active participation during the lectures and on some written reports. Students will be encouraged to work on applications related to their major 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 lectures before each new lecture.

●How to Respond to Questions
By email.

●Notice for Students
It is expected that the students will show a certain maturity in studying independently and in choosing some exercises and problems to solve. Study sessions will be organized on a weekly basis.

●Message from the Instructor
This course in an optional subject which does not count towards the number of credits required for graduation in any program at Nagoya University.

Textbook	Free textbooks and lecture notes will be provided during the lectures
Reference Book	Free reference books will be provided during the lectures
Reference website	http://www.math.nagoya-u.ac.jp/~richard/SMLfall2021.html