

Course number		U-LAS10 20012 LE55									
Course title (and course title in English)		Nonlinear Mathematics-E2 Nonlinear Mathematics-E2		Instructor's name, job title, and department of affiliation		Graduate School of Informatics Program-Specific Senior Lecturer,Li, Douglas					
Group		Natural Sciences		Field(Classification)		Mathematics(Development)					
Language of instruction		English		Old group		Group B		Number of credits		2	
Number of weekly time blocks		1		Class style		Lecture (Face-to-face course)		Year/semesters		2024 • Second semester	
Days and periods		Fri.3		Target year		Mainly 2nd year students		Eligible students		For science students	
[Overview and purpose of the course]											
Mathematical modeling is very important to understand and to analyze natural phenomena, and nonlinear models have been of great importance in many fields. This class emphasizes on mathematical analysis for those nonlinear models, esp. nonlinear differential equations, and the goal of the class is to study introductory theories to deal with nonlinear equations through some examples. Furthermore, this class is also intended for students to enjoy interesting approach to natural phenomena through mathematical analyses. An additional goal of this course is to give a chance to the students to present and discuss mathematics in English.											
[Course objectives]											
The goal of the class is to study introductory theories to deal with nonlinear differential equations through some examples. In addition to learning modern mathematics and proofs, students can learn how to discuss and present mathematical topics in English through this course.											
[Course schedule and contents)]											
Some mathematical models appeared in mathematical physics are shown, and fundamental mathematical theories related with those models are explained. The course will cover the following topics: 1. Mathematical modeling in fluid mechanics (5 weeks) 2. Fundamental theories about differential equations (4 weeks) 3. Analysis of the aimed phenomena through mathematical approach (5 weeks).											
Total : 14 classes, 1 Feedback session											
[Course requirements]											
(Eligible students) mainly the sciences of the second grade. Students are required good understanding of both calculus and linear algebra studied in the first grade.											
----- Continue to Nonlinear Mathematics-E2(2)											

Nonlinear Mathematics-E2(2)

[Evaluation methods and policy]

The evaluation of the course will take into account the following criteria:

- homework (40%)
- presentation (20%)
- final report (40%)

[Textbooks]

Not Specified

[References, etc.]

(**References, etc.**)

F.G. Tricomi 『Differential equations』 (reprinted form Dover Publications)

E. Goursat 『A course in mathematical analysis" vol. 1-3』 (reprinted form DoverPublications)

[Study outside of class (preparation and review)]

Students are required to solve exercises given in class for deep understanding of the class.

[Other information (office hours, etc.)]

This class is an English class of "非線型数学" read in the first semester. Their syllabuses are the same to each other, but topics in class especially those of fluid mechanics, are not the same.