科目ナンバリング U-LAS10 20012 LE55											
授業科目名 Nonlinear Mathematics-E2 Nonlinear Mathematics-E2					打耳	担当者所属 職名·氏名 情報学研究			飞科 特定講師 Li, Douglas		
群	自然科	学科目群		分野(分類)	数学(	(発展)			付	用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コ3	マ	授業	業形態 講義		<b>遠(対面授業科目)</b>	
開講年度・開講期	2024 •	後期	曜時限金	:3		配当	当学年	主として	2 回生	対象学	生理系向

#### [授業の概要・目的]

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.

### [到達目標]

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.

# [授業計画と内容]

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

### [履修要件]

(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.

### [成績評価の方法・観点]

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

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

# [教科書]

Not Specified

Ionlinear Mathematics-E2(2)
参考書等]
(参考書) .G. Tricomi 『Differential equations』(reprinted form Dover Publications) . Goursat 『A course in mathematical analysis" vol. 1-3』(reprinted form DoverPublications)
授業外学修(予習・復習)等]
udents are required to solve exercises given in class for deep understanding of the class.
その他(オフィスアワー等)]
his class is an English class of "非線型数学" read in the first semester. Their syllabuses are the same to ach other, but topics in class especially those of fluid mechanics, are not the same.