科目ナンバリング U-LAS10 20017 LE55															
授業科目 <英訳>	名 Hone Hone	ors Mathe ors Mathe	s Mathematics A-E2 s Mathematics A-E2					皆所属 ・氏名	理学研究		飞科	科 准教授		劉逸侃	
群	自然科	自然科学科目群			〕野(分類)	ዾ(発展	₹)					用言語	英	吾	
旧群	B群	単位数	2単位		週コマ数	1⊐	। र	括	受業別	業形態		義(対面授		業科目)	
開講年度・ 開講期	2025 ·	後期	期 曜時限 火3			₽	配当学年		主とし	主として1回生		対象学生		理系向	
[授業の概要・目的]															
This course provides opportunities to learn mathematics in more depth for highly motivated students. It supplements and combines Calculus A and Linear Algebra A, while takes these basic courses as starting point to treat more advanced related topics.															
[到達目標]															
In addition to learning advanced 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]															
Below is a list of themes that may be covered. The actual topics of the lecture will be determined upon investigating the interests and level of the participating students. The selected topics will be covered during 15 lectures, including one feedback session. 1. Topics in set theory (tentatively 5 ~ 9 weeks) 1.1 Sets and their operations 1.2 Sets and maps 1.3 Equinumerous sets and cardinality 2. Fundamental theory of real numbers (tentatively 3 ~ 6 weeks) 2.1 Dedekind cut and construction of real numbers 2.2 Continuity and completeness of real numbers 2.3 Real numbers and infinity 3. Fundamental fractional calculus (tentatively 2 ~ 4 weeks) 3.1 Some special functions and their properties 3.2 Riemann-Liouville integral operator 3.3 Caputo and Riemann-Liouville derivatives 4. Numerical linear algebra (tentatively 2 ~ 5 weeks) 4.1 Normed linear spaces and matrix norms 4.2 QR decomposition and singular value decomposition 4.3 Linear least square problems 4.4 Iterative methods for linear systems															
Calculus A and Linear Algebra A. Students are strongly encouraged to take Calculus B and Linear Algebra B in parallel (or prior) to this course.															

Honors Mathematics A-E2(2)

[成績評価の方法・観点]

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

(1) homework and presentation of students during the lectures (about 50%)

(2) final examination (about 50%)

The method of evaluation will be made precise at the first lecture.

[教科書]

使用しない

[参考書等]

(参考書)

Paul R. Halmos ^I Naive set theory (Springer, 1974) ISBN:978-0-387-90092-6 Other references will be announced during the class according to the selected topics.

[授業外学修(予習・復習)等]

As in every mathematics course, students should read notes carefully and repeatedly after the class, solve exercise problems and try to find alternative proofs, counterexamples, etc. After many hours of such practice, one may get an intuitive understanding of the materials covered.

[その他(オフィスアワー等)]

Students are welcome to ask questions during or at the end of the class. The schedule of office hours will be announced in the first lecture.

[主要授業科目 (学部・学科名)]