科目ナンバリング	U-LAS10 10031 LE55						
授業科目名 <英訳>	Calculus-E2 [For non-science majors] Calculus-E2 [For non-science majors]			担当者所属 職名・氏名	工学研究科　講師　Arseniy Aleksandrovich, Kuzmin		
群	自然科学科目群			分野(分類)	数学(基礎)	使用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・ 開講期	2025・前期	曜時限	火3	配当学年	全回生	対象学生	全学向

[授業の概要・目的]

The rapid progress of computers has made it possible to analyze various social and natural phenomena by mathematical methods, and the importance of these methods is increasing.

As a basis for learning such mathematical methods, this course provides basic mathematics of differential and integral calculus for liberal arts students.

The course does not require high school mathematics for students aspiring to be scientists and engineers (high school mathematics III) but is designed so that students who have taken only high school mathematics courses for liberal arts can understand the content of the course.

Differentiation and integration of functions of one variable and differentiation of functions of two variables will be taught.

[到達目標]

To understand the basic concepts and theorems of derivatives and integral of univariate functions and derivatives of bivariate functions and to acquire the computational techniques to apply them.

[授業計画と内容]

The following subjects will be explained. There will be 15 lessons, including feedback. The order of subjects is not fixed, but the lecturer will decide according to the lecturer's lecture policy and the student's background and understanding of the subject.

1. Number sequences and functions (limits of sequences, *infinite series, limits of functions, continuous functions, composition of functions, elementary functions, *inverse functions) [2-3 weeks]
2. Differentiation (differential coefficients, derivatives, derivatives of products and quotients, derivatives of composite functions, derivatives of elementary functions, mean value theorem, increase/decrease and maxima/minima of functions, *Taylor expansion) [4-6 weeks]
3. Integral calculus (indefinite integral, primitive functions of elementary functions, integrals by substitution, integration by parts, definite integral, *area, *volume of revolution) [2-3 weeks]
4. Differentiation of bivariate functions (functions of two variables, partial differentiation, total differentiation, differentiation of composite functions of two variables, extrema, *tangent plane, *conditional extrema problem) [3-4 weeks]
5. Feedback [1 week]

Items marked with an asterisk (*) will be covered if time permits.
In addition to lectures on the above topics, there will be exercises (in-class exercises or homework) related to the topics.

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[履修要件]

Students are assumed to have a good understanding of high school mathematics except calculus.

[成績評価の方法・観点]

30% Homework and participation
20% Midterm quiz
50% Final test

[教科書]

Instructions on the textbook will be given in class. For those topics for which no appropriate textbook is available, printed or electronic materials will be provided by the lecturer.

[参考書等]

（参考書）
授業中に紹介する

[授業外学修（予習・復習）等]

In order to learn mathematics, it is necessary to try to solve the exercises on your own, in addition to preparing and reviewing the lectures.

[その他（オフィスアワー等）]

[主要授業科目（学部・学科名）]