科目ナンバリング	U-LAS10 10023 LE55						
授業科目名 <英訳>	Quest for Mathematics I-E2 Quest for Mathematics I-E2			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	2026・前期	曜時限	火2	配当学年	主として1・2回生	対象学生	全学向

[授業の概要・目的]

In the "Quest for Mathematics", complex numbers and their applications are introduced. At first, we will follow some of the steps of their invention and learn to understand their basic properties. These numbers are very important in many different fields, such as quantum mechanics or electric engineering. In this course we explore geometrical applications of complex numbers, geometrical transformations, and complex functions.

[到達目標]

- To understand the origins and importance of complex numbers
- Understanding of the geometric representation of complex numbers
- Learn the complex numbers arithmetic
- Learn the relation between trigonometric and exponential functions
- Acquire the ability to use complex numbers

[授業計画と内容]

In this course the following topics are covered:

1. Introduction and history of complex numbers. Geometric definition of complex numbers.
2. From geometric definition to Bombelli's "wild thought". The Argand plane and modern definitions.
3. Simple complex arithmetic and De Moivre's formula.
4. Equivalence of symbolic and geometric arithmetic.
5. Euler's formula: moving particle argument.
6. Euler's formula: power series argument.
7. Applications: trigonometry.
8. Applications: geometry.
9. Applications: calculus.
10. Applications: algebra.
11. Applications: vector operations.
12. Complex numbers and Euclidean geometry: transformations.
13. Motions and reflections.
14. Similarities and complex arithmetic. Spatial complex numbers.

14 lectures in total and one feedback class.

[履修要件]

No knowledge of complex numbers is required to join this class. All necessary concepts are introduced during the lecture.

[成績評価の方法・観点]

Evaluation will be based on:
10% attendance and participation
20% homework

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Quest for Mathematics I-E2(2)

20% quiz
50% final exam

[教科書]

使用しない

[参考書等]

（参考書）

John Stillwell 『Mathematics and its history』（Springer）ISBN:978-1-4419-6052-8

[授業外学修（予習・復習）等]

Preparation for lectures will include revision of class materials and homework assignments. The work during the semester is most important, it helps to build up the understanding. If you have no problems with homework, there will be no problem solving the tests.

[その他（オフィスアワー等）]

[主要授業科目（学部・学科名）]