科目ナンバリング	U-LAS70 10002 SE50						
授業科目名<英訳>	ILAS Seminar-E2 :Physics of Life（生命の物理学） ILAS Seminar-E2 :Physics of Life			担当者所属職名・氏名	理学研究科　准教授　DECHANT, Andreas		
群	少人数群	単位数	2単位	週コマ数	1コマ	授業形態	ゼミナール（対面授業科目）
開講年度・開講期	2026・後期	受講定員(1回生定員)	15 (15) 人	配当学年	主として1回生	対象学生	全学向
曜時限	水5	教室	共西02			使用言語	英語
キーワード	Science / Physics / Biology						

[授業の概要・目的]

The purpose of this seminar is to learn about the various ways in which physics can be used to understand living matter, from the motion of small molecular machines in the cells of our bodies to the collective behavior of swarms of animals. We will also learn how the physical description of living matter can allow us to emulate it to develop new materials and devices.
In this seminar, we will learn about selected topics in biophysics by reading articles from scientific journals. For each topic, we will start with one or two weeks of lectures explaining the necessary background. After that, we will read a scientific article together. We will discuss the contents of the article and its importance for the field of biophysics. The following week, some students will be asked to give a brief presentation about a part of last week’s article.

[到達目標]

- Understanding how living matter is different.
- Becoming familiar with some of the techniques currently used in biophysics.
- Learning to read scientific articles and present their contents.

[授業計画と内容]

Class 1-3: Motion and machines at small scales.
Class 4-6: Biological and artificial molecular motors.
Class 7-9: Randomness, noise, and fluctuations.
Class 10-11: Collective motion and swarming.
Class 12-14: Polymers and DNA.
Class 15：Feedback

[履修要件]

Knowledge about statistical mechanics and/or thermodynamics is helpful but not required.

[成績評価の方法・観点]

The students will be graded based on their participation in class (25%) and their presentation (75%). Students will need at least 60% in total to pass.

[教科書]

No textbook, articles will be given as handouts.

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ILAS Seminar-E2 :Physics of Life（生命の物理学） (2)

[授業外学修（予習・復習）等]

Each student will be asked to prepare a short presentation on a part of a scientific article once during the course.

[その他（オフィスアワー等）]

Office hour: Thu. 15:00-16:00

[主要授業科目（学部・学科名）]