科目ナンバリング	U-LAS70 10002 SE50						
授業科目名 <英訳>	ILAS Seminar-E2 :Introduction to Engineering in Biology and Medicine（医工学の基礎） ILAS Seminar-E2 :Introduction to Engineering in Biology and Medicine			担当者所属職名・氏名	医生物学研究所 助教　　金　英寛		
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・前期	受講定員 (1回生定員)	12 (12) 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	共北3B			使用言語	英語
キーワード	Biomedical engineering / Medicine / Biology / Computational biology						

[授業の概要・目的]

Solving current societal issues demands integrating ideas and taking a multifaceted approach. Integrating engineering, biology and medicine, this seminar aims at introducing students to multidisciplinary approaches to understanding and/or solving complex issues in biology, medicine and/or engineering. Discussions will be centered on understanding multidisciplinary approach toward solving the said problem by integrating knowledge and concepts from various disciplines (science, engineering and/or medicine).

[到達目標]

To nurture interests in knowledge integration from diverse scientific disciplines.
To learn how to integrate knowledge and concepts toward application to solving complex open-ended questions in biology, medicine and/or engineering.

[授業計画と内容]

This seminar will tackle selected topics related to application of engineering principles and knowledge to solving clinical problems, and/or elucidating known and unknown biological phenomena. Besides discussions, students will have opportunities to make some short presentations on topics of interest. Topics might be flexibly changed based on our interests.

1) Recent exciting discoveries in science (3 weeks)
We will begin the discussion series by exploring ground-breaking discoveries in science and discuss their impacts on the society. Through this session, we will learn how to obtain fundamental knowledges from scientific articles.

2) Engineering in biology (3 weeks)
We will explore the convergence of biology with engineering that have enabled the manipulation, analysis and detailed study of living systems including biomechanics, tissue engineering, sequencing technologies, and other biotechnologies. Through this discussion, we aim to create a map that provides an overview of the field of bioengineering.

3) Engineering in medicine (3 weeks)
We will discuss trends in medical engineering and specific application in areas such as drug development, surgical tools, visualization technologies, and other medical technologies. To facilitate this discussion, we will think about some clinical case stories in medical situation.

4) Emerging areas in engineering for biology and medicine (3 weeks)

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ILAS Seminar-E2 :Introduction to Engineering in Biology and Medicine（医工学の基礎）(2)

Rapid advances in science in recent years have led to revolutionary developments in the fields of medicine and biology. One such technology is "in silico" technologies such as AI and computational simulation. Here, we will discuss the emerging trends of "in silico" technologies in biology and medicine, and present some of their potential applications.

5) Student presentations and lecture review (2 weeks)

6) Feedback (1 week)

[履修要件]

None in particular. The seminar will be discussion-based.

[成績評価の方法・観点]

Attendance and class participation 60%, Discussions and presentations: 40%

[教科書]

使用しない

[参考書等]

（参考書）

Handouts may be given out.

[授業外学修（予習・復習）等]

Prior reading of scientific papers on topics to be discussed is recommended to enhance understanding.

[その他（オフィスアワー等）]

Office hours will be announced during class hours.

[主要授業科目（学部・学科名）]