Course number	U-LAS70 10002 SE50				
Course title (and course title in English)	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	**Instructor's name, job title, and department of affiliation**	Institute for Life and Medical Sciences Assistant Professor,KIM, Young Kwan		
Group	Seminars in Liberal Arts and Sciences	**Number of credits**	2	**Number of weekly time blocks**	1
Class style	seminar (Face-to-face course)	**Year/semesters**	2025・First semester	**Quota (Freshman)**	12 (12)
Target year	Mainly 1st year students	**Eligible students**	For all majors	**Days and periods**	Wed.5
Classroom	3B, Yoshida-South Campus Academic Center Bldg. North Wing			**Language of instruction**	English
Keyword	Biomedical engineering / Medicine / Biology / Computational biology				

[Overview and purpose of the course]

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).

[Course objectives]

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.

[Course schedule and contents)]

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)

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

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)
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)

[Course requirements]

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

[Evaluation methods and policy]

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

[Textbooks]

Not used

[References, etc.]

（References, etc.）
Handouts may be given out.

[Study outside of class (preparation and review)]

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

[Other information (office hours, etc.)]

Office hours will be announced during class hours.

[Essential courses]