科目ナンバリング	U-LAS12 10021 LE57						
授業科目名 <英訳>	A Guide to Modern Physics A-E2 A Guide to Modern Physics A-E2			担当者所属 職名・氏名	理学研究科　教授　WENDELL,Roger		
群	自然科学科目群			分野(分類)	物理学(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3	配当学年	全回生	対象学生	全学向

[授業の概要・目的]

This course will gently introduce topics from classical (Newtonian) mechanics, thermodynamics, and use those as a bridge to introduce ideas in modern physics, such as relativity and quantum mechanics.
Prior knowledge of physics is not required and students from any major will be able to follow the course.

Lectures will be discussion-oriented, with several examples and in-class demonstrations. There will be many opportunities for students to improve their scientific English abilities.

[到達目標]

The object of the course is to understand fundamental concepts in modern physics and learn about how to describe the natural world with science.

[授業計画と内容]

Lectures will introduce students to various topics in fundamental physics.

1) Topics in classical Mechanics:
Velocity, Acceleration, Momentum, Forces, Gravity, Equations of Motion

2) Topics in thermodynamics:
Heat, Work, Entropy, Carnot Cycle

3) Topics in Light and Waves
Wave nature of light, Refraction, Interference, Optics

4) Topics in Modern Physics
Basic Quantum Mechanics, Special Relativity

We will spend 3 to 4 weeks on each of the topics above, choosing those most suitable for enrolled students. Each topic will be presented in a clear and simple format without use of advanced mathematics.

There will be a total of 15 lectures total, including the feedback session.

[履修要件]

No prior physics experience is required. We might introduce differentiation and integration in some cases, but these will be explained in simple terms.

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[成績評価の方法・観点]

Student's comprehension of the course material will be evaluated based on participation in in-class discussions (20 points) and reports (80 points).

[教科書]

We won't use a single textbook, but the lecturer will provide materials relevant for each topic.

[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 get the most from the lectures, students need to review material from the previous lecture for discussion. Homework will be due two weeks from the date it is assigned and students are encouraged to bring questions during the intervening week to improve their understanding of the assignment.

[その他（オフィスアワー等）]

Students interested in improving their scientific English and learning something about physics are encouraged to join this course.

[主要授業科目（学部・学科名）]