科目ナンバリング	U-LAS12 10026 LE57						
授業科目名 <英訳>	Physics for All-E2 Physics for All-E2			担当者所属 職名・氏名	理学研究科　准教授　DECHANT, Andreas		
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	水3	配当学年	主として1・2回生	対象学生	文系向

[授業の概要・目的]

This course introduces physics to students from non-physics majors. Students will learn about the basics of classical physics-mechanics and electrodynamics. While the main purpose of this course is to gain an intuitive understanding of elementary physics, another major objective is to learn the art of problem solving: How can we use what we learned to tackle problems that we have not encountered before? Physics, with its combination of fundamental concepts and concrete problems, provides a unique opportunity to acquire this crucial skill.

[到達目標]

- Understand the basics of mechanics and electrodynamics and where they appear in everyday situations.
- Become familiar with the underlying mathematical concepts.
- Learn how to solve problems in a systematic way.

[授業計画と内容]

Week 1: Observation, measurement, and units
Here, we will learn how to observe physical laws in the world around us. We will introduce different physical quantities, their units and how to measure them.

Week 2-4: Motion in one, two and three dimensions
In this section, we will learn how to use calculus to describe the motion of objects, first along a straight line and then along paths in three-dimensional space.

Week 5-6: Newton's laws of motion
This section deals with forces acting on physical objects. We will discuss Newton’s three laws and learn how to apply them to predict whether and how objects will move under the influence of forces.

Week 7-9: Momentum and energy
We will introduce the concepts of momentum and energy and discuss how the fact that they do not change during the motion of objects helps us to predict the flight of rockets and the outcomes of collisions.

Week 10-11: Oscillations and periodic motion
Oscillations, like the swinging of a pendulum, shape our daily lives in many ways,the most obvious being the earth's orbit around the sun; in physics, they are equally important and fundamental for understanding many phenomena. In this section, we will learn why periodic motion is so universal and how we can describe it using differential equations.

Week 12-14: Electrodynamics
In the final part of this course, we will learn about electric and magnetic fields and how they can be used to describe the motion of charged objects. The goal of this section is to understand the physical basis of electricity, which is so crucial for our daily lives.

Physics for All-E2(2)へ続く↓↓↓

Physics for All-E2(2)

Week 15：Final written examination

Week 16：Feedback

[履修要件]

Students should be familiar with high-school level mathematics (algebra, calculus and vectors). Having taken a physics course in high school is helpful but not required.

[成績評価の方法・観点]

The final score will be determined by weekly exercise sheets (50%) and the final written examination (50%). Students need at least 60% in total to pass.

[教科書]

H.D. Young and R.A. Freedman 『University Physics with Modern Physics』 （Pearson）ISBN:978-0135216118

[授業外学修（予習・復習）等]

Students will be asked to complete and hand in assignments on a weekly basis.

[その他（オフィスアワー等）]

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

[主要授業科目（学部・学科名）]