科目ナンバリング	U-LAS13 10022 LE60						
授業科目名 <英訳>	Chemistry of Sustainable Energy-E2 Chemistry of Sustainable Energy-E2			担当者所属 職名・氏名	エネルギー理工学研究所 講師 ARIVAZHAGAN RAJENDRAN		
群	自然科学科目群	分野(分類)	化学(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・後期	曜時限	火3	配当学年	全回生	対象学生	理系向

[授業の概要・目的]

We explore the fundamental principles and applications of sustainable energy from a chemical perspective. The course introduces the concept of sustainable energy, which aims to provide an inexhaustible energy supply while minimizing the emission of greenhouse gases into the atmosphere. Topics include solar, wind, geothermal, and biomass energy, as well as photocatalysis, environmental remediation, and materials for sustainable energy conversion.

[到達目標]

The goal of this course is to develop a foundational understanding of materials related to renewable energy and to grasp the mechanisms of energy conversion that support a sustainable future.

[授業計画と内容]

1. What is sustainable energy?
2. Solar energy: Inorganic solar cells
3. Solar energy: Organic solar cells
4. Solar energy: Dye-sensitized and quantum dot solar cells
5. Wind energy: Types of wind turbines
6. Wind energy: How wind turbines work?
7. Geothermal energy: Direct use of geothermal energy
8. Geothermal energy: Geothermal power generation
9. Biomass energy: Thermochemical conversion
10. Biomass energy: Biochemical conversion
11. Photo-catalyst: Air purification and sterilization
12. Photo-catalyst: Water purification
13. Materials: Structure and thermal insulation
14. Materials: Polymers and sustainable energy
15. Assignment which is considered as a term examination
16. Feedback

[履修要件]

特になし

[成績評価の方法・観点]

Results will be evaluated by the submission of homework written in English (30%), attendance and discipline (20%), and assignment which is considered as a term examination (50%).

Chemistry of Sustainable Energy-E2(2)へ続く↓↓↓

Chemistry of Sustainable Energy-E2(2)

[教科書]

Nancy E. Carpenter 『Chemistry of Sustainable Energy』（CRC Press）ISBN:978-1-4665-7532-5

[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]

It is recommended that students review the key points to be learned.

[その他（オフィスアワー等）]

Office hours are scheduled for Fridays, 15:00-17:00.

[主要授業科目（学部・学科名）]