科目ナンバリング	U-LAS13 10033 LE60				
授業科目名<英訳>	Chemistry on Natural and Human Environments-E2 Chemistry on Natural and Human Environments-E2	担当者所属職名・氏名	化学研究所　講師　PINCELLA, Francesca		
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	金4	配当学年	全回生	対象学生	文系向

[授業の概要・目的]

This course is intended to provide a basic understanding of environmental chemistry, with emphasis on case studies and examples of environmental issues from all over the world.
This course will offer an overview of how elements and materials distribute, cycle, and change in nature, and how they are affected by human activities. This course will enable students to understand the "global environment", the "local environment", and related environmental issues, and will also give them an opportunity to consider how to improve their daily interactions with the environment.

[到達目標]

In this course students will familiarize themselves with the basic concepts of environmental chemistry, especially in relation to the human interaction with nature and the dramatic impact of our actions on the environment. The students will be invited to reflect on their own interactions with the environment and the consequences of pollution and over-exploitation of natural resources.

[授業計画と内容]

This course consists of 14 lectures, exam and one feedback class.
1. What is nature and the environment?
2-3. Basic toolkit for environmental chemistry (2 weeks)
4. Chemistry of radioactive materials
5. Nuclear fission and fusion
6. "Forever chemicals", pesticides, fertilizers, and eutrophication
7. Chemistry of the soil: domestic garbage, toxic waste, heavy metals, and soil remediation
8. Water chemistry: fresh water and sea water, microplastic pollution
9. Chemistry of stratosphere and troposphere
10. Acid rain and air pollution
11. Destruction of the ozone layer and Freon
12-13. Global warming and fossil fuels (2 weeks)
14. Renewable energy
15. Exam
16. Feedback
Guest lectures on Fukushima nuclear accident by Prof. Tsunoyama Yuichi (Agency for Health, Safety and Environment), and on microplastics by Prof. Sutti (Deakin University) during regular class time.

Chemistry on Natural and Human Environments-E2(2)へ続く↓↓↓

Chemistry on Natural and Human Environments-E2(2)

[履修要件]

At the beginning of the course, you do not need any prior knowledge of basic chemistry. All essential knowledge for the course will be provided as needed in class, especially during lessons 2 and 3.

[成績評価の方法・観点]

Evaluation will be based on attendance, active class participation (short quizzes and/or questions in class, 10%), individual (in-class midterm exam, 35%) and group assignments (infographic, 20%), and final in-class exam (multiple choice and open questions, 35%)

[教科書]

使用しない

[参考書等]

（参考書）

C. Baird; M. Cann 『Environmental Chemistry』（Freeman）ISBN:978-1-4292-7704-4
Stanley Manahan 『Environmental Chemistry』（CRC Press, 2022）ISBN:9780367560546
G.W. vanLoon; S.J. Duffy 『Environmental Chemistry: a global perspective』（Oxford University press）ISBN:9780198749974
J.E. Andrews; P. Brimblecombe; T.D. Jickells; P.S. Liss; B.J. Reid 『An introduction to Environmental Chemistry』（Blackwell Publishing）ISBN:9780632059058
R.M. Harrison 『Understanding our Environment: an Introduction to Environmental Chemistry and Pollution』（Royal Society of Chemistry）ISBN:0854045848
R.M. Harrison; S.J. de Mora 『Introductory chemistry for the environmental sciences』（Cambridge University Press）ISBN:0521256739

[授業外学修（予習・復習）等]

Students are encouraged to revise the class material regularly and submit assignments on time.

[その他（オフィスアワー等）]

Office hours: online or in person meetings with the instructor can be requested (appointment by email or on LMS)

[主要授業科目（学部・学科名）]