科目ナンバリング	U-LAS13 10008 LE60						
授業科目名<英訳>	Basic Organic Chemistry I-E2 Basic Organic Chemistry I-E2			担当者所属職名・氏名	工学研究科　准教授　Juha Lintuluoto		
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・前期	曜時限	木2	配当学年	主として1回生	対象学生	理系向

[授業の概要・目的]

For natural science chemistry students (1st year class (T17-T22) designated in the Department of Chemical Science and Technology, Faculty of Engineering). This course will serve as an entrance to systematically study organic chemistry, which is essential for understanding useful substances such as pharmaceuticals, pesticides, fragrances, and materials at the molecular level. This course gives the opportunity to learn English while studying chemistry, an important skill for chemists. This course covers the Basic Organic Chemistry I 「基礎有機化学I」 course held for classes T17-22 in Japanese.

[到達目標]

Learn the basics of organic chemistry as a molecular science and form the basis for learning advanced organic chemistry.
The comprehension goals for individual lecture items are described in the Course schedule and Contents.

[授業計画と内容]

Using designated textbook, lectures will be given on topics 1-7 below. One feedback class will be held for this course to make 15 lessons in total.

1.　Explanation on how to proceed with the lectures and an overview of organic chemistry (1 lesson)

2.Covalent bonding and shapes of molecules (3 Lessons)
Describing electronic structure of atoms, covalent bonds and molecular polarities. Understanding of molecular structures using valence bond and molecular orbital methods and resonance.

3.Alkanes and cycloalkanes (2 Lessons)
The IUPAC names, structure, conformation, and physical properties of alkanes and cycloalkanes will be described.

4.Acids and Bases (3 Lessons)
Bronsted-Lowry acids and bases, acid dissociation constants, pKa , the relative strengths of acids and bases, the equilibrium of the acid-base reactions, reaction coordinate diagrams, molecular structure and acidity, and Lewis acids and bases are described.

5.Alkenes: Bonding and properties (1 Lesson)
The structure, character of the alkenes, and physical properties of alkenes will be described.

6.Reaction mechanisms (1 Lesson)
How to describe and understand the reaction mechanisms of organic reactions.

7.Alkene reactions (4 Lessons)
The reaction mechanisms, reaction selectivity, and thermodynamics of electrophilic addition reactions to

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alkenes, oxidation reactions and reduction reactions of alkenes will be described.

[履修要件]

This course is suitable for Chemical Science and Technology students from groups 1T17-1T22.

[成績評価の方法・観点]

The course be conducted based on normal points (attendance and participation, homework and efforts, 20 points in total) and final exam (80 points).

[教科書]

Brown, Iverson, Anslyn, Foote 『Organic Chemistry』（Cengage Learning）ISBN:978-0-357-45186-1（ 9th Edition, Chapters 1-2, 4-6）
村上正浩監訳『ブラウン有機化学（上）』（東京化学同人）ISBN:978-4807907793
Japanese version of Brown, Iverson, Anslyn, Foote is also OK.

[授業外学修（予習・復習）等]

Imposing homework for review and requesting submission

[その他（オフィスアワー等）]

[主要授業科目（学部・学科名）]

理学部