

Organic Chemistry 1

Syllabus Number

5D156

Special Subjects

Elective 2 credit

UCHIDA, Kenichi

1. Course Description

The knowledge of organic chemistry is essential to study a variety of fields in bioscience. All the reactions occurring in our body has nothing to surprise, they just obey the laws of organic chemistry, which means that they are the same reactions occurring in glass flasks. To understand how the life is maintained and to develop novel drugs, the knowledge of organic chemistry is needed. The aim of this course is to help students acquire fundamentals of organic chemistry. You can acquire knowledge and ability of DP1, DP2, and DP3.

2. Course Objectives

The goals of this course are to be understand the followings:

- (1) Properties of aromatic compounds
- (2) Organohalogen compounds
- (3) Oxygen containing compounds
- (4) The mechanism of electrophilic substitution on aromatic compounds
- (5) The mechanism of nucleophilic substitution reactions
- (6) The mechanism of elimination reactions
- (7) Basic properties of organometallic compounds

3. Grading Policy

Grading will be decided based on term-end examination.

4. Textbook and Reference

Textbook

Robert J. Ouellette, J. David Rawn (in Japanese) "Principles of Organic Chemistry" (Kihon yuukikagaku) Tokyokagakudojin (ISBN978-4-8079-0911-7).

5. Requirements(Assignments)

Nothing special.

6. Note

7. Schedule

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|------|---|
| [1] | Aromatic compounds 1: Nomenclature, Aromaticity |
| [2] | Aromatic compounds 2: Electrophilic Substitution, nitrations, halogenations, etc |
| [3] | Aromatic compounds 3: Electrophilic Substitution, Reaction mechanism |
| [4] | Aromatic compounds 4: o,p-orientation, m-orientation |
| [5] | Organohalogen compounds 1: Nomenclature, inductive effect |
| [6] | Organohalogen compounds 2: SN1 and SN2 reactions |
| [7] | Organohalogen compounds 3: E1 and E2 reactions |
| [8] | Oxygen containing compounds 1: Nomenclature and reactivity of Alcohols |
| [9] | Oxygen containing compounds 2: Synthesis and reaction of Alcohols |
| [10] | Oxygen containing compounds 3: Phenols and Thiols |
| [11] | Oxygen containing compounds 4: Nomenclature and reactivities of Ethers and Epoxides |
| [12] | Oxygen containing compounds 5: Synthesis of Ethers and Epoxides |
| [13] | Oxygen containing compounds 6: Reactions of Ethers and Epoxides |
| [14] | Organometallic compounds: Grignard reagents and organolithium compounds |
| [15] | Summary and Examination |