

## Course Schedule Information

Course Code／時間割コード	271002
Semester／開講区分(開講学期)	Summer Term
Day and Period／曜日・時間	Wed1
Course Name (Japanese)／開講科目名	薬品製造化学特別講義
Room／教室	Lecture Room B
Course Name／開講科目名(英)	Advanced Topics in Synthetic Medicinal Chemistry
Capacity／定員	999
Course Numbering Code／ナンバリング	27ADPS6T102,27MEPH7T002
Credits／単位数	1.0
Student Year／年次	1,2
Instructor／担当教員	AKAI Shuji,KANOMATA Kyohei,SAWAMA Yoshinari

## Basic Syllabus Information

Other／履修その他

[List of Instructor\(s\)](#)

## Detailed Syllabus Information

Course Name／講義題目	Advanced Topics in Synthetic Medicinal Chemistry
Language of the Course／開講言語	Japanese/English
Type of Class／授業形態	Lecture Subject
Course Objective／授業の目的と概要	<p>Small-size organic compounds involved in researches in pharmaceutical sciences, such as drug discovery and understanding life phenomena, as well as the knowledge and technologies for synthesizing the compounds are inevitable for the development of these sciences. In this lecture, students will study advanced and modern "synthetic organic chemistry", based on the knowledge gained in lectures of "Basic Organic Chemistry", which is indispensable for efficient synthesis of drugs, drug candidates, and bioactive naturally-occurring organic molecules. This class is made up of lectures and discussion on the latest synthetic organic chemistry and its mechanism related to oxidation/reduction reactions, reactions of carbon-carbon multiple bonds, protecting functional groups, and synthetic design.</p> <p>Attainment targets</p> <ol style="list-style-type: none"> <li>1. Explain the synthetic design</li> <li>2. Explain the importance of stereochemical considerations in planning syntheses</li> <li>3. Explain the protecting functional groups</li> <li>4. Explain the oxidation reactions</li> <li>5. Explain the reduction reactions</li> <li>6. Explain the reactions of carbon-carbon multiple bonds</li> <li>7. Review</li> </ol>
Learning Goals／学習目標	
Requirement / Prerequisite／履修条件・受講条件	<p>The auditing students should have knowledge of comprehensive "organic chemistry" on undergraduate level.</p> <p>Lectures will be conducted according to the textbook.</p> <p>1st: Chapter 1, Synthetic Design</p> <p>2nd: Chapter 2, Stereochemical Considerations in Planning Syntheses</p> <p>3rd: Chapter 3, The Concept of Protecting Functional Groups</p> <p>4th: Chapter 4, Functional Group Transformations: Oxidation</p> <p>5th: Chapter 4, Functional Group Transformations: Reduction</p> <p>6th: Chapter 5, Reactions of Carbon-Carbon Double Bonds</p> <p>7th: Chapter 5, Reactions of Carbon-Carbon Triple Bonds</p> <p>8th: Review</p>
Class Plan／授業計画	
Independent Study Outside of Class／授業外における学習	Students are requested to prepare for the class by reading the textbook and review it.
Textbooks／教科書・教材	G. S. Zweifel, M. H. Nantz, and P. Somfai, Modern Organic Synthesis: An Introduction, 2nd edition, Wiley, 2017.
Reference／参考文献	<p>J. Clayden et al. Organic Chemistry (2nd edition), Oxford university press</p> <p>P. Y. Bruice, Organic Chemistry (8th edition), Pearson Education, Inc.</p> <p>P. C. Vollhardt, N. E. Schore, Organic Chemistry (6th edition), W. H. Freeman and Company</p> <p>J. G. Smith, Basic Organic Chemistry (5th edition), McGraw Hill Education.</p>
Grading Policy／成績評価	<p>[Overall evaluation] Evaluate with the final exam (50%), mini-exam (30%), and discussion (20%).</p> <p>[Formative evaluation] After grasping the degree of comprehension of the students through reflection of exercises and questions during the lesson, they are reflected in the lesson.</p>
Other Remarks／コメント	Since lectures are conducted in cooperation with "Special lecture on molecular

**Special Note／特記事項**

synthetic chemistry", it is desirable to take lectures in conjunction with this lecture.

none

**Office Hour／オフィスアワー**

Akai: Mon, noon to 1 pm

Sawama: Mon, noon to 1 pm

Kanomata: Mon, noon to 1 pm

**Keywords／キーワード**

synthetic design, stereochemistry, protecting functional groups, oxidation reactions, reduction reactions, reactions of carbon-carbon multiple bonds

**Messages to Prospective Students／受講生へのメッセージ**

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## Instructor(s)

**Instructor Name／教員氏名**

**Extension／内線**

Akai, Shuji

8210

Sawama, Yoshinari

8212

Kanomata, Kyohei

8213

**Cautions for Students**

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