

Advanced Organic Chemistry---2026 spring semester

A. Course Description

The course in advanced organic chemistry gives comprehensive knowledge in the field of organic synthesis. The students will gain a deeper understanding of advanced synthetic methods as well as a broader knowledge regarding organic reactivity. The important aspects of reactivity and selectivity of a particular transformation within the field of organic synthesis will be discussed in this course. In particular, organic reactions for controlling the chemo-, regio- and stereoselectivity are highlighted.

B. Lecturer

Dr. Jiun-Jie Shie 謝俊結 (shiej@gate.sinica.edu.tw)

C. Lecture time & place

Tuesdays AM 9:00– PM 12:00, classroom B105, Institute of Chemistry, Academia Sinica
(3 sessions / week, 50 min / session)

D. Text Book

"Advanced Organic Chemistry, Part B: Reactions and Synthesis" by Francis A. Carey and Richard J. Sundberg, 5th edition. New York, NY: Springer, 2007.

E. References

I. "The Art of Writing Reasonable Organic Reaction Mechanisms" by Robert B. Grossman, New York, NY: Springer.

II. "The Logic of Chemical Synthesis" by E. J. Corey and Xue-Min Cheng, John Wiley & Sons, Inc.

F. Teaching Method

Oral

G. Lecture Dates and Syllabus

April 21 Nucleophilic Substitution and Elimination

April 28 Oxidations and Reductions

May 5 Reactions of Aromatic Compounds

May 12 Cycloadditions and Rearrangements

May 19 Photochemistry and Free-Radical Reactions

May 26 Organometallic Compounds in Organic Synthesis

June 2 Transition Metal-Catalyzed and Mediated Reactions

June 9 Final Exam