

COLLEGE OF CHEMISTRY COURSE GUIDE (../INDEX.HTML)

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CHEM 113 - ADVANCED MECHANISTIC ORGANIC CHEMISTRY (3 UNITS)

COURSE OVERVIEW

SUMMARY

Chemistry 113 is a periodically offered course that introduces students to physical organic chemistry.

PREREQUISITES

CHEM 3A (chem3a.html)/CHEM 12A (chem12a.html) and CHEM 3B (chem3b.html)/CHEM 12B (chem12b.html)

Additional Notes

TOPICS COVERED

- Molecular Structure, Molecular Orbital Theory and Thermodynamics
- Strain and Stability
- Acid-Base Chemistry
- Energy Surfaces and Kinetic Analysis
- Experiments Related to Thermodynamics and Kinetics
- Organic Reaction Mechanisms (Nucleophilic attack on carbonyls, Enolate chemistry, Aldol reaction)
- Thermal Pericyclic Reactions (Woodward-Hoffman rules for cycloadditions, electrocyclizations and sigmatropic rearrangements)

WORKLOAD

COURSEWORK

- 5 Problem Sets (20%)
- 1 Midterm (30%)
- Final Exam (50%)

TIME COMMITMENT

3 hours of lecture per week. Problem sets take 1-2 hours.

CHOOSING THE COURSE

WHEN TO TAKE

The class is predominantly juniors and seniors with some sophomores, as this is an upper-division elective course for the chemistry major. This course assumes knowledge of Organic I/II, so it's a good idea to take this after taking Chem 3A/B or 12A/B. No knowledge of quantum mechanics or statistical mechanics (Chem 120A/B) is required, although the class does touch on Transition State Theory which is usually covered in Chem 120B.

Note that this class is only offered in the fall.

WHAT NEXT?

- CHEM 200 ([chem200.html](#))/CHEM 260 ([chem260.html](#)) - Physical Organic Chemistry

ADDITIONAL COMMENTS AND TIPS

The recommended textbook for this course is Anslyn & Dougherty's *Modern Physical Organic Chemistry*, a standard physical organic chemistry textbook. I found Ian Fleming's *Molecular Orbitals and Organic Chemical Reactions* helpful for the thermal pericyclic reactions section of the class (the last few lectures). Lectures often follow Anslyn & Dougherty quite closely, and it may be helpful to follow along with the textbook or a textbook PDF (easily found online).

Overall, this class was very relaxed, due to the short number of lectures (24 total) and the infrequency of graded assignments (7 total assignments / exams total!). Exams were generally straightforward. Feel free to take this class during a harder semester.

This course is an elective that may fulfill part of the Allied Subjects requirement.

Written by: Edward Mu

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COLLEGE OF CHEMISTRY PEER SERVICES

Made by Angela Lee, c/o 2019



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