

Instructor Dr. Matthew Lukeman
Elliot Hall Room 215
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Summary

This course will deal with the application of physical techniques to organic chemistry to better understand structure, bonding, and reactivity. The course will first deal with modern theories of bonding on organic molecules, starting with Lewis and valence bond theory, and quickly moving to the much more informative molecular orbital theory. Huckel MO theory will be used to investigate conjugation, aromaticity, excited states, and other properties of organic molecules, in a qualitative and quantitative way. The chemistry of pericyclic reactions will be investigated in detail, as an exemplar of the influence that orbital symmetry has on organic reactions.

The course will also cover kinetic isotope effects and linear free energy relationships, and how they can provide information on organic mechanisms, excited-state chemistry, and time permitting, we will examine the chemistry of reactive intermediates.

Assignments

The course will have a modest number of assignments to be completed and submitted.

Project

The course will have one project/presentation scheduled for later in the term

Midterm

The course will have one midterm (Oct. 23), during the class slot. It is worth 25% of the course.

Final Exam

The date of the exam will be determined by the Registrar's office early in the term. The exam is cumulative; you are responsible for all material covered in the course.

Marking Scheme

Assignments	10%
Project	10%
Midterm	25%
Final Exam	55%

Textbook

No textbook is required for the course. Instead, you will be given written course notes compiled by Dr. Lukeman. Several excellent reference books are available in the library for individual topics.

Online Resources

I will be making a significant amount of course materials available to you electronically via ACORN, including copies of powerpoints used in class and course notes. Assignments will be posted on ACORN as well, so please ensure that you have full access and know how to navigate the ACORN system. Acadia also has a site license for ChemDraw – you will need it! Please use the ACS drawing standard.

Office Hours

Mondays 1:30 – 4:30 pm, or by appointment. Please feel free email or drop by my office anytime.

Plagiarism and Academic Honesty

[https://central.acadiau.ca/registrar/faculty information/academic integrity](https://central.acadiau.ca/registrar/faculty%20information/academic%20integrity)

Consult the Registrar's website for details regarding academic integrity and the penalties associated with infraction. All midterm tests, quizzes, assignments, laboratory reports, and the final examination are evaluations of your independent work. Evidence of non-independent work on any one of these evaluations is considered an infraction of academic honesty by your professor and will not be tolerated. The penalty ranges from a zero on that piece of work to a zero for the course.