Chemistry 8321/4321

Organic Synthesis

Fall, 2023

•• *4 credits (8321)* •• *3 credits (4321)* ••

Course Website:	http://www1.chem.umn.edu/groups/hoye/teaching/Teaching_8321_4321_Fall_2023 Handouts, problem sets, the evolving reading assignment list (with exam schedule and problem set due dates), and some additional resources (such as sample exams from previous course offerings) will be available at this site.			
Instructor:	Thomas R. Hoye	419 Smith Hall	612-625-1891	hoye@umn.edu
TA:	Katharine Toll	413 Smith Hall	508-596-6805	toll0166@umn.edu
Lectures:	MWF; 11:15–12:05	231 Smith Hall		
Office Hours:	Tuesdays	11:00-noon	(334 Smith)	
(starting Sept. 8th)	Fridays	1:15-2:15	(334 Smith)	

Online Resources: **required:** https://www.synarchive.com

other: https://organicchemistrydata.org/hansreich/resources/syntheses/?page=abscisic-acid-constantino%2F

https://www.organicdivision.org/blog/news/dave-evans-problem-set-generator-added-to-organic-chemistry-data-website/

Textbooks: **required**:

Strategic Applications of Named Reactions in Organic Synthesis by Laszlo **Kürti** and Barbara **Czakó.** Elsevier: Boston, 2005. ISBN-13: 978-0124297852.

additional useful texts:

Advanced organic chemistry, by David E. Lewis. Oxford University Press: New York, 2016. ISBN: 9780199758975. (This Lewis book is well-written and a very good choice for further augmentation of information you have may have seen in an introductory organic chemistry course.)

Modern Physical Organic Chemistry, by Eric V. Anslyn and Dennis A. Dougherty. University Science Books: Mill Valley, CA, 2006. ISBN: 978-1891389313.

Titles below denoted by * are *online* via our library; you can locate these using MNCAT (http://prime2.oit.umn.edu/primo_library/libweb/action/search.do?tab=default_tab&mode=Advanced&scp.scps=scope%3a(tcsearch)&vid=TWINCITIES)

* Total Synthesis of Natural Products. At the Frontiers of Organic Chemistry. eds. Jie Jack Li and E. J. Corey. Springer: New York, 2012.

* Strategies and Tactics in Organic Synthesis. Volumes 7-15, ed. Michael Harmata. Academic Press: Boston, 2007–2021.

* Organic Mechanisms: Reactions, Stereochemistry and Synthesis, by Reinhard Bruckner; ed. Michael Harmata. Springer: New York, 2010.

* Advanced Organic Chemistry, Second Edition - Part B: Reactions and Synthesis, by Francis A. Carey and Richard J. Sundberg. Springer: New York, 1995. ISBN 978-0-387-68354-6.

* Organic synthesis, 3rd edition, by Michael Smith. Elsevier: Boston, 2011.

* Introduction to Strategies for Organic Synthesis, by Laurie Starkey. John Wiley & Sons, 2012.

* Advanced Organic Chemistry, Fifth Edition - Part A: Structure and Mechanisms, by Francis A. Carey and Richard J. Sundberg. Springer: New York, 2007.

* The Art of Writing Reasonable Organic Reaction Mechanisms, Third Edition, by Robert B. Grossman, Springer Nature: Switzerland AG, 2019.

Course Philosophy and Approach: This course is intended to provide an understanding of and appreciation for the major topics and issues confronting those who prepare carbon-containing compounds (aka, practitioners of organic synthesis). Mechanistic analysis, structure, stereochemical aspects, asymmetric synthesis, conformational analysis, and, ***especially***, stereo-, regio-, and chemo-***selectivity*** will attract much of our attention, discussion, and consideration.

Course Grades:

	8321	**4321**
Problem Sets	7.5%	10%
Project (1 credit)‡	25.0%	----
Midterm Exams (2)	37.5%	50%
Final Exam	30%	40%

Problem Sets: twelve, throughout the semester (~weekly, except for exam weeks).

‡**Project:** ACS-Style Presentations on Saturdays November 11th* and 18th* (ca. 10 am to ca. 3 pm). Many details to follow.

* Dates now confirmed.

Exams (all):

Midterm Exams:	6-8 pm	Wednesday, Oct. 11* (331 Smith)	(16 class periods)
	6–8 pm	Wednesday, Nov. 29* (331 Smith)	(20 class periods)
Final Exam:	1:30–3:30 pm	Wednesday, Dec 20**	(6 class periods)

* Dates and time now confirmed.

** UMN scheduled final exam time (TRH will later arrange for a three-hour time period that includes these two hours).

Modality transparency:

This course is scheduled as an in-person course. I intend to hold all class sessions in-person except if situational factors arise, such as personal illness of the instructor, in which case the class may be held synchronously via Zoom or recorded for later viewing.

Legitimate (i.e., Excused) Absences:

While **makeup work for legitimate absences** is part of University policy, faculty and instructors choose how to accommodate absences based on their course. In this course, excused absences will be handled as follows:

- Students are expected to obtain notes from a classmate of class material missed.
- If you inform me of a legitimate absence in advance, I will attempt to record the class session on Zoom and make it available only to the person who has a legitimate absence.
- Please note: I do not intend to record class sessions at the request of individual students.

Illnesses and Face Coverings:

Illness: You should stay at home if you experience significant signs of illness or have a positive COVID-19 test result. If this occurs, please consult with your healthcare provider about an appropriate course of action. I will follow these same protocols and will let you know if the delivery of this course has to be temporarily changed as the result of my own circumstances. Absences related to illness, including COVID-19 symptoms, for yourself or your dependents, are **legitimate "excused" absences**

Face coverings: I do not plan to wear a mask in the lecture room, but I fully support your individual choices around masking.

Department of Chemistry Diversity and Inclusion Committee
Collaboration among people of all cultures and backgrounds enhances our experiences and contributes to excellence in teaching, learning, and research. We strive for a climate that celebrates our differences and strengthens our department by embracing and working to increase diversity, equity, and inclusion. For more information about our departmental efforts and upcoming activities: http://z.umn.edu/ChemDiversity. For a list of diversity related resources: http://z.umn.edu/DiversityandInclusionResources.

Ally Statement
I strive to serve as an effective Ally for students who hold marginalized identities. I am available to listen and support you in a safe and confidential manner. I can help connect you with resources to help address barriers that may interfere with your academic and social success on campus as related to diversity, access, or safety. My goal is to help students be successful and to maintain a safe, accessible, and equitable campus.

Equity, Diversity, Equal Opportunity, and Affirmative Action
We welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences to this course. Instructors, teaching assistants, and peer students are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. This is in agreement with university policy:
http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf

Access and Disability Accommodations
In this course, we support anyone requiring accommodations for access to class activities and materials. Please contact the Disability Resource Center (https://disability.umn.edu), which will provide a letter to share with the instructor on how to facilitate an inclusive learning environment.

Sexual Harassment and related topics
In this course, we strive to provide a safe and positive environment for everyone. Please review policy regarding sexual harassment and related topics:
Sexual Harassment, Sexual Assault, Stalking and Relationship Violence
For support and help please contact the Aurora Center: http://aurora.umn.edu

Additional UMN Policy Statements (UMN)

Instructors must have as part of the syllabus copies of, references to, or statements on the following and are encouraged to discuss elements of the policies particularly applicable to their course (see Appendix - *Recommended Policy Statements for Syllabi*):

1. Grade definitions from the Administrative Policy: *Grading and Transcripts: Twin Cities, Crookston, Morris, Rochester*.
2. Scholastic Dishonesty (see Board of Regents Policy: *Student Conduct Code* and the Administrative Policy: *Teaching and Learning: Instructor and Unit Responsibilities: Twin Cities, Morris, Rochester*).
3. Administrative Policy: *Makeup Work for Legitimate Absences: Twin Cities, Crookston, Morris, Rochester*
4. Board of Regents Policy: *Student Conduct Code*; Administrative Policy: *Teaching and Learning: Student Responsibilities (Twin Cities, Crookston, Morris, Rochester)*
5. Board of Regents Policy: *Sexual Harassment, Sexual Assault, Stalking and Relationship Violence*
6. Board of Regents Policy: *Equity, Diversity, Equal Employment Opportunity, and Affirmative Action*
7. Board of Regents Policy: *Disability Resources*
8. Statement about the availability of mental health and stress management services.
9. Board of Regents Policy: *Academic Freedom and Responsibility*