



**Intermediate Organic Chemistry
CHEM 345-004
Honors Section
Spring 2020**

Canvas Course URL: <https://canvas.wisc.edu/courses/174891>

Meeting Time and Location

Tuesday and Thursday 9:30 – 10:45 am in Room 2373 Chemistry

Discussion Sections:

461 - Friday 1:20 – 2:10 pm in Room B279

463 - Friday 12:05 – 12:55 pm in Room B387

Instructional Mode + Credit Hour Accounting

Instruction in this course will primarily occur in a lecture format, although some periods will be devoted to other modes. The three credit hours derive from the traditional Carnegie Foundation definition – we meet for lecture for the equivalent of 150 min per week (two 75-min periods of faculty-student instruction). In addition, success in this course will require additional hours of studying outside of lecture, for example there will be assigned readings from the required textbook and problem sets.

INSTRUCTORS AND TEACHING ASSISTANTS

Professor Shannon S. Stahl

Office hours: W 4:45 – 5:45 pm

Office: Rm 6132 Shain Tower, Chemistry

Phone: 265-6288

Email: stahl@chem.wisc.edu (preferred)

Note: include "Chem 345" in the Subject line for all emails. Average turnaround will be about a day.

Andrew Maza

Office hours: Thursdays 4:35-6:15 and Friday 11-11:50 am 6227

Email: amaza@chem.wisc.edu

a list of **all** 345 TA office hours will be posted when it is finalized to Canvas.

OFFICIAL COURSE DESCRIPTION

Course Description

Chemistry 345 is the second course of a two-semester sequence in organic chemistry. It covers diverse themes in organic reactivity, building on a foundation provided in Chemistry 343. Chemistry 341 does not satisfy the prerequisite for 345.

Prerequisites

Grade of C or better in CHEM 343. In addition, in almost all cases, students in this honors section of 345 have participated in the honors section of 343.

You are not engaged so much in acquiring knowledge as in making mental efforts under criticism. A certain amount of knowledge you can indeed with average faculties acquire so as to retain; nor need you regret the hours spent on much that is forgotten, for the shadow of lost knowledge at least protects you from many illusions. But you, go to school not for knowledge as much as for arts and habits; for the habit of attention, for the art of expression, for the art of assuming at a moment's notice a new intellectual posture, for the art of entering quickly into a person's thoughts, for the habit of submitting to censure and refutation, for the art of indicating assent or dissent in graduated terms, for the habit of regarding minute points of accuracy, for the habit of what is possible in a given time, for taste, for discrimination, for mental courage and mental soberness. Above all, you go to school for self-knowledge.

William Cory – Master at Eton College (1861)

Chemists are a strange class of mortals, impelled by an almost maniacal impulse to seek their pleasures amongst smoke and vapour, soot and flames, poisons and poverty, yet amongst all these evils I seem to live so sweetly that I would rather die than change places with the King of Persia.

Johann Joachim Becher, *Physica subterranea* (1667)

LEARNING OUTCOMES

Course Learning Outcomes

1. Use structural and spectroscopic information to evaluate reaction mechanisms.
2. Identify and explain reactivity trends for most common organic reactions, with an emphasis on conjugated systems, aromatic systems, and carbonyl chemistry.
3. Apply reactions taught in 343 and 345 towards the retrosynthesis of a complex target.
4. Apply knowledge towards writing reasonable organic reaction “arrow-pushing” mechanisms for reactions that have not been explicitly discussed in class.
5. Identify the ways in which organic chemistry intersects other disciplines.

GRADING

Grading in this course will be based upon your scores on homeworks, quizzes, exams, and a cumulative final exam. While attendance at lectures and discussions is encouraged, it is not specifically required. Note that quizzes and exams will happen during lecture and discussion section times. Finally, although statistical tools

Grading	Format	Points
homework	[best 10 of 11] × 2	20
quizzes	[best 5 of 6] × 10	50
exams	100 × 3	300
final	200	200
	Total	570

will be used to assist in setting the grading scale, a simple curve will not be enforced. It is possible for everyone in the class to receive an A grade. If your scaled final exam score is better than your lowest midterm exam score, then your scaled final score can replace this midterm score. In this case, your final exam can count for up to 400 points, or more than ½ of your total points. This mechanism replaces makeup exams, which are not practical in most cases.

DISCUSSION SESSIONS

There are weekly 50-min discussion sections led by Andrew Maza

LABORATORY SESSIONS

CHEM 344 is the associated laboratory course, but concurrent registration is NOT required.

REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS

- **Required:** Organic Chemistry, 6th Ed. by Loudon and Parise (same as CHEM 343)
- **Recommended:** Study Guide and Solutions Manual to Accompany Organic Chemistry (same as CHEM 343). There are copies of this on reserve in the Steenbock and College Libraries
- **Supplemental:** Pushing Electrons by Daniel Weeks. If you are rusty on how to write reasonable mechanisms for chemical reactions, this is a classic, short primer. On reserve.
- **Molecular Model Kit:** Nearly any kit will suffice, such as the HGS "Organic Chemistry Basic" Set (Maruzen, ~\$28). Many other suppliers, including Darling and Duluth Labs.
- I will NOT be using Sapling
- I WILL be using Canvas

EXAMS, QUIZZES, PAPERS & OTHER MAJOR GRADED WORK

- All quizzes, exams, and the final are closed. You are being graded on your mastery of the material and all work must be your own. No outside assistance of any kind is permitted, such as notes, books, or electronics of any kind.
- Quizzes will take place in regular discussion sections and are unannounced. Content will be based on handouts or content relevant to the lectures from the previous week(s).
- Exam 1: Feb 25 in class
- Exam 2: Mar 31 in class
- Exam 3: April 28 in class
- Final: Tuesday, May 5th, 2:45 pm to 4:45 pm, room TBD
- Make up exams for planned, reasonable absences must be arranged in advance. Emergencies will be dealt with on a case-by-case basis.

HOMEWORK & OTHER ASSIGNMENTS

Homework problems and suggested readings will be posted to the course Canvas site. Students are expected to complete all readings and work all problems. Completed problem sets will be due in discussion section on Fridays.

Grades for homeworks will be assigned as complete (2 pts) or incomplete (0 pts).

Additional studying, such as working extra problems, flash cards, writing (and re-writing) summaries of topics, and team-based learning, will likely be required to obtain a high grade in this course.

RULES, RIGHTS & RESPONSIBILITIES

Beyond the normal duties of doing assignments (the [Guide's to Rules, Rights, and Responsibilities](#)), attending lecture, and trying your best, I expect you all to:

1. *Do readings before lecture.* I will not exhaustively cover every aspect of the text in lecture, but instead cover the more difficult concepts and add supplemental material not found in the book. You will only be able to keep up if you keep up with the readings!
2. *Ask questions.* It is possible (likely) that I will make inadvertent errors in lecture, leading to confusion. If you are brave enough to ask, your fellow students and I will be grateful.
3. *Do the homework problems.* The schedule has suggested problems that will be graded on a complete/incomplete basis. The most successful students will do all of the assigned problems, in addition to extra problems in areas where they are having trouble. I cannot emphasize enough the importance of practice problems. There is no better way to learn organic chemistry than by working problems! Pro tips: DO NOT look at the answers until after you have completed the problems. The library has many other organic chemistry textbooks with extra problems, if you exhaust your supply in Loudon.
4. *Participate in the discussion section.* The discussion sections will be most valuable if you participate actively.

ACADEMIC INTEGRITY

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform Prof. Stahl of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Prof. Stahl will work either directly with you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. <http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>

DIVERSITY & INCLUSION

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world. <https://diversity.wisc.edu/>

(Tentative) Course Calendar - 2020

Week	Date	Loudon Chapter	Topic // Comments	Notes
1	Jan 21 Jan 23 Jan 24	Ch 15 Ch 15	Intro/Review Dienes, Resonance, Aromaticity	HW1 Due
2	Jan 28 Jan 30 Jan 31	Ch 15 Ch 16	Aromaticity and Electrophilic Arom. Subst.	HW2 Due
3	Feb 4 Feb 6 Feb 7	Ch 16 Ch 16	<i>(Prof. Stahl out of town)</i>	HW3 Due
4	Feb 11 Feb 13 Feb 14	Ch 18 Ch 18	Aryl/Vinyl Halides and Catalysis	HW4 Due
5	Feb 18 Feb 20 Feb 21	Ch 18 Ch 17	Allylic and Benzylic Reactivity	HW5 Due
6	Feb 25 Feb 27 Feb 28	EXAM 1 Ch 19	<i>(Prof. Stahl out of town)</i> Aldehydes and Ketones	No HW
7	Mar 3 Mar 5 Mar 6	Ch 19 Ch 19/20	Aldehydes and Ketones/Carboxylic Acids	HW6 Due
8	Mar 10 Mar 12 Mar 13	Ch 20 Ch 21	Carboxylic Acid Derivatives	HW7 Due
	Mar 14–22	Spring Break		
9	Mar 24 Mar 26 Mar 27	Ch 21 Ch 21/26	<i>(Prof. Stahl out of town)</i> Peptides and Proteins	HW8 Due
10	Mar 31 Apr 2 Apr 3	EXAM 2 Ch 22	Enols and Enolates	No HW
11	Apr 7 Apr 9 Apr 10	Ch 22	Enols and Enolates	HW9 Due
12	Apr 14 Apr 16 Apr 17	Ch 23 Ch 23	Amines	HW10 Due
13	Apr 21 Apr 23 Apr 24	Ch 27 Ch 27	Pericyclic Reactions	HW11 Due
14	Apr 28 Apr 30 May 1	EXAM 3 Ch 27	Pericyclic Reactions	
	Tuesday, May 5		Final Exam @ 2:45 pm –4:45 pm	