

University of Wisconsin-Madison

CHEM 343: Introductory Organic Chemistry

Contact Information

Matt (Doc) Bowman

262-2519

Chemistry 5232

bowman@chem.wisc.edu

(Please include Chem 343 in the subject line).

3 credits-Traditional Carnegie Definition

How Credit Hours are Met: *This class is 3 credits. It meets for 50 min of lecture three times per week and 50 min of discussion once per week over the 14-week fall term. Over the course of the term, students are expected to engage in at least 135 hours of learning activities, which includes class attendance, reading, studying, preparation, problem sets, and other activities.*

Course Description: Chemistry 343 covers fundamental aspects of organic molecular structure, including stereochemistry, and introduces basic themes in organic reactivity. It is the first semester of a two-semester organic chemistry sequence. Chemistry 345 is the second course in the sequence. Class is for students expecting to take two semesters of organic chemistry.

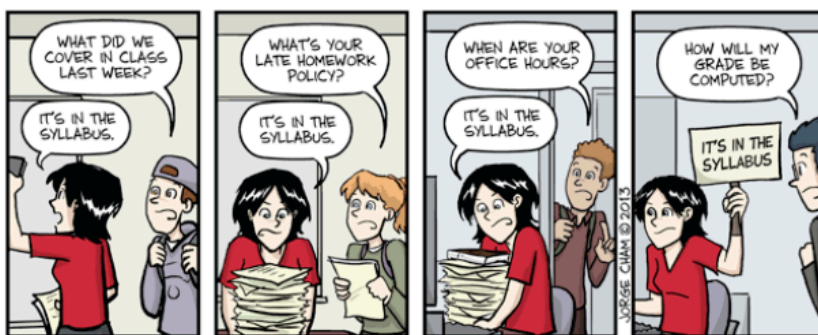
Prerequisite: Chem 104, 109, or 116

Course Designations: Intermediate level; physical science breadth; counts as L&S credit

Instructional Mode: face-to-face

Piled Higher and Deeper by Jorge Cham

www.phdcomics.com



IT'S IN THE SYLLABUS

This message brought to you by every instructor that ever lived.

WWW.PHDCOMICS.COM

title: "It's in the syllabus" - originally published 5/10/2013

Lecture 1:

MWF 9:55-10:45 AM

Room: Educational Sciences 204

Canvas URL: <https://canvas.wisc.edu/courses/174729>

Office Hours

Scheduled

Mondays 11:00 AM-12:00 PM in Chem 1371

Tuesdays 9:30 AM-11:30 AM in Chem 1371

Wednesdays 1:30-4:00 PM in ????

(or by appointment)

Teaching Assistants

Dylan Holst

holst2@wisc.edu

Diana Wang

djwang@wisc.edu

TA Office Hours

TA office hours are held in Chemistry B317 (Organic TA Office)

There is a schedule for various TA office hours posted outside Chem B317. The TA's on the schedule are organic chemists and can answer your questions. They do not have to be assigned to our lecture section. I will be talking about topics in a different order than other Chem 343 instructors as such it may take the TA a little bit of time to answer a question. (If someone asks me a question regarding general chemistry, I have to think quite a bit to figure out the correct answer. Though the deer in the headlight look in my eye usually is enough to convince them to find a gen chem TA).

Learning Outcomes:

- a.) Students will learn how to master an intellectual discipline that requires both understanding of a complex conceptual framework and memorization of specific facts. This general goal will be pursued in the specific context provided by introductory organic chemistry. There are different paths to achieving this learning outcome, because different people learn in distinct ways. Students will be challenged to determine the learning strategies and styles that are most effective for them. Achieving this learning outcome will empower students to master other disciplines they encounter subsequently as they pursue diverse careers. These later challenges will arise without the framework provided by a syllabus, a textbook, lectures, discussion sections and frequent assessments (exams). Therefore, Chemistry 343 and 345 are taught in a manner that encourages students to take responsibility for their own learning success.
- b.) Interpret, visualize, and predict reactivity of molecules by their Lewis structures
- c.) Solve problems by using different approaches

Grading:

The grade will be based on:

Exams (3 x 100 points)

TopHat Points 20 points

Quizzes (3 x 10 points) If there are more than three quizzes, the lowest quizzes will be dropped.

Final Exam (200 points)

Some extra credit points (~4 points will be available)

The maximum number of points possible will be **550 points**.

ABCDF:

If you earn 90% of the total points, you will receive an A.

If you earn 77% of the total points, you will receive *at least* a B.

If you earn 57% of the total points, you will receive *at least* a C.

If you earn 40% of the total points, you will receive *at least* a D.

There is more information further on in the syllabus.

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 Matt 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. Matt, 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

Institutional statement on diversity: "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/>

Matt's Schedule:

Matt Bowman this spring is lecturing for two courses Chem 343 and Chem 345. There are ~220 students in 345 and ~220 students in 343. Matt will try to keep everything straight, but will not remember necessarily which student is in which lecture. Because he has to split his mind to deal with each class, he might not be completely there. There will be weeks in which there will be an exam happening for both classes. At which point, any vestiges of his sanity will disappear and there will be drool, *lots and lots of drool*. (His sanity is not being helped much right now as Matt Bowman is writing in the third person). Please state in any email correspondence with him whether you are in 343 or 345. The answer to your questions may differ significantly. Please be patient. If he does not respond within 12 hours, try again.

Teaching Style:

In case you are wondering, I have no idea what I am doing. We will try different things each semester. Some of them work, some of them will not. That is how we learn. This semester, I will be trying out additional quizzes and assigned videos. It might work or it might fail spectacularly with flames and tears and demons ripping into our reality and consuming our gall bladders. Either way, we will have learned something.

Tophat:

To sign up for tophat, go to <https://tophat.com/>
Click on signup and follow the directions from there.

The join code is 934420

Textbook: *Organic Chemistry*, 6th Ed., Marc Loudon

Quite a few of my course evaluations in the past stated that they never read or opened the book. I do not recommend this course of action, but I do understand it. I follow a different order than the textbook, but the material from Chapters 1-11 and 14-15 will be covered. The course schedule has page numbers containing relevant information from the text along with key words that you can use in an index of any organic textbook for other explanations. Instructors of Chem 344 and 345 may expect you to have this textbook for these future courses. Exams and quizzes are based on the material from lectures, power point tutorials, video lectures, discussion sections, and problem sets. The book is there to provide alternative explanations/approaches to help you understand the material covered.

Powerpoint tutorials

There is some subject matter that can be best explained by the book or a simple powerpoint tutorial. These tutorials are available at canvas. Please go through them **by** the indicated date on the course schedule.

Video lectures

Canvas will host a variety of video lectures. These are typically 5-10 minutes long. They are there to highlight important concepts or clarify points in organic chemistry.

Lecture Capture

I will do my best to record all of the lectures on video and post them on canvas. However, please still come to lecture. Sometimes technical difficulties occur and a lecture is not available.

Problem sets

There will be a problem set for each lecture day except for the day of an exam or the day preceding an exam. These problem sets will not be graded and are there to help you out. Keys will be available by the next lecture day on canvas.

Practice exams

I will make at least three practice exams available for each exam. The exams will be very similar to the practice exams in terms of directions. Answer keys for these exams will also be available. **DO NOT SIMPLY LOOK AT THE KEY. ATTEMPT THE PRACTICE EXAM FIRST. HAVE ANOTHER STUDENT IN THE CLASS GRADE IT AS YOU GRADE THEIRS. DISCUSS DISCREPANCIES AND ONLY THEN LOOK AT THE KEY.**

Mental Health Resources:

Now is as good as time as any to talk about mental health. I realize you are under a lot of pressure. Some of that pressure is internal and some of that is external. Regardless of the source of the pressure, the pressure is very real. Students have a tendency to equate grades with future happiness. It is an understandable connection, but not really a true one. I have quite a few C's on my undergraduate transcript (a few in chemistry) and I still ended up with my dream job. I have had a student that received an F in organic chemistry and had to retake the class. She went on to medical school. So, a low grade is not the end of the world.

If disaster happens or at anytime you feel that you cannot cope with something, or just need to vent, there are resources available on campus for you. Take advantage of them.

University Health Services (UHS):

Offers group, individual, couple/partner therapy stress management, and disordered eating assessments and treatment at no cost. It also provides massage therapy, yoga, and other wellness services.

Student Activity Center 7th floor 608-265-5600

www.uhs.wisc.edu/mentalhealth/getting-started

Ask.Listen.Save:

Ask.Listen.Save. is a student org that aims to prevent suicide by reducing the stigma of mental illness. Through educating the student body, they aim to increase the awareness and create a safe environment in which students know they are not alone and can feel free to ask for help.

Student Activity Center Suite 3196 www.Asklistensave.org

Badgerspill:

BadgerSpill is a peer-to-peer support network of and for UW-Madison students. You can write in online to "spill" or vent privately about whatever you are going through and get unbiased feedback, empathy, and resources from other students who have dealt with similar situations. Both parties are anonymous to one another and the spiller gets multiple responses within 24 hours.

www.badgerspill.com

Please look on the canvas page for the mental health resource sheet for more resources.

Exams:

There are three regular exams plus the final exam. Each regular exam will be worth 100 points. The regular exams will be held on Wednesday nights from 7:15 pm to 8:45 pm. The dates are February 12, March 11, and April 15. Please notify me of any conflicts so alternative arrangements can be made. You may not drop any exam. The final exam is worth 200 points and cannot be dropped. It will take place on Wednesday, May 6 from 10:05 am to 12:25 pm. Unfortunately, this date is set by the University and I can only grant makeup exams in a VERY limited manner such as two exams within a 24 hour period. Please do not ask for a makeup exam due to airline tickets going home for early for summer break. I'm afraid that is not listed as a valid reason.

Exams will be graded and scanned. Electronic copies of the exams will be posted to canvas. Hard copies will **NOT** be returned because of logistics. PLEASE, PLEASE, PLEASE LOOK AT THEM. UNDERSTAND WHAT YOU HAVE MISSED. MAKE SURE THE SCORES WERE ENTERED CORRECTLY. **YOU WILL HAVE ONLY ONE WEEK TO REPORT DISCREPANCIES.**

Exam regrade policy: Mistakes in exam grading will occasionally be made. You will have one week after exams are returned to submit the entire exam for regrading. Keep in mind, since mistakes may or may not be in your favor, the exam grade can actually be lowered. All decisions on the regrades are final. **DO NOT UNDER ANY CIRCUMSTANCES CHANGE AN ANSWER AND SUBMIT IT FOR A REGRADE. THIS IS ACADEMIC MISCONDUCT AND WILL BE DEALT WITH HARSHLY.**

Regrade submittal procedure: Email Matt which problem that he should look at.

Final Exam Regrades: Final Exams will be posted to canvas accounts as soon as we are able to. Once posted, an email as well as the exam key will be sent to all students. At that point, you will have 24 h to proofread the grading and contact Matt with any errors. After 24 h have passed, Matt will set the final cutoffs and set grades. The final cutoffs will not be released.

Exam Penalties:

Though technically, the regular exams are worth 100 points apiece and the final exam is worth 200 points, it is possible to score a negative value on the exam. There are four exam penalties that you should be aware of and **AVOID** at all costs. **CONSIDER YOURSELF WARNED.**

Texas Carbon Penalty (TCP): If one of your answers has a carbon drawn that has five bonds to it, that is an affront to organic chemistry. Such a blasphemous creation will result in a five point penalty in addition to missing any points on that question.

Acid-Base Arrow Question (AB AQ): To describe what is happening in a reaction, chemists used the curved arrow notation. This shows the movement of electrons. The most important example of this is in acid-base reactions. I will show you the answer to this question along with examples of wrong answers. **THIS IS THE ONE OF THE MOST FUNDAMENTAL CONCEPTS IN ORGANIC CHEMISTRY.** It is used in 343, 345, 344, biochemistry, etc... If you cannot answer this question, then -5 points.

Time Penalty: Writing on the exam before the TA's say start or after time is called can be a five point penalty.

Top hat:

There will be 20 points available for top hat. There will be lots more top hat questions during lecture.

% Questions Answered Correctly	Top Hat Points at END
59.6-69.5	20
49.6-59.5	16
39.6-49.5	12
29.6-39.5	8
14.6-29.5	4
0-14.5	0

A reminder for the meme generation:



Take Home Quizzes:

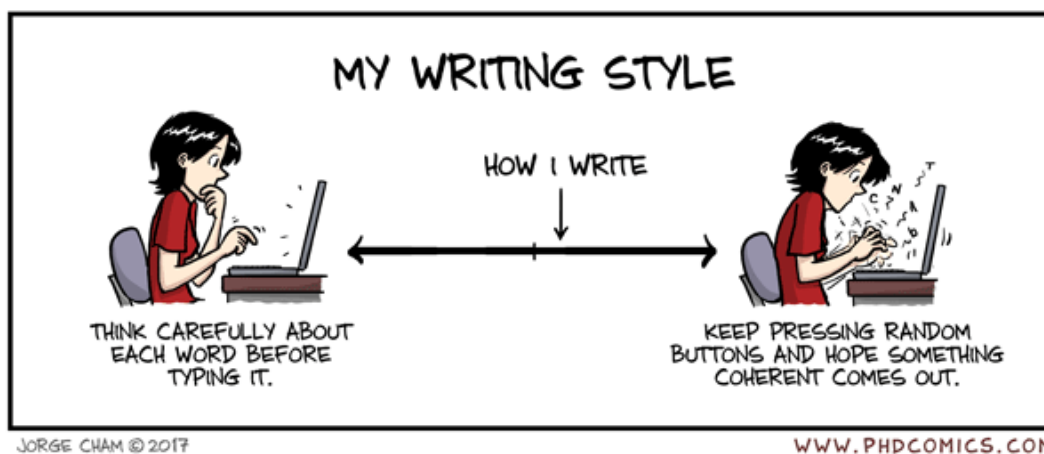
There will be four take-home quizzes worth 10 points each. You can drop one quiz. They will be due the following week in Matt Bowman's mailbox in Chemistry 1146. The take home quiz is open book, open note, open classmate, but is not open TA/tutor/me. By open classmate I mean it is okay to converse with one another, but it is absolutely **NOT** okay to dissect each other or figure out answers by the use of haruspicy. In any event, I suggest you try the quiz on your own first. **I would tell you the dates in the syllabus about when these quizzes are, but that would involve a level of organization that frankly I do not possess.**

Letter of Recommendation Policee:

I try to teach about ~ 802.5 undergraduates each year. Unfortunately I won't be able to get to know all of you. That makes writing detailed rec letters nearly impossible. Rec letters from me will include grade and class rank and my impression of you. I can write them but I highly suggest that you get a rec from a prof in a small, higher level course or better yet a prof that you work for in a research group. They are more likely to give a better and more fuller depiction of you and will likely use spell check.

Piled Higher and Deeper by Jorge Cham

www.phdcomics.com



title: "How I Write" - originally published 1/27/2017

Yup. That pretty much sums me up (only more to the right on that particular writing spectrum).

Academic Misconduct

You are all adults. There is no reason to cheat, but plenty of reasons not to. An **F** in the course is one of many reasons. Cheat sheets, notes, textbooks, someone else's paper, iPods, cell phones, a crystal ball bearing the disembodied spirit of the Great Organic Chemist R. B. Woodward, etc... are prohibited from the exam. Use of these prohibited materials during an exam will result in a zero for the exam score. A zero on an exam due to cheating cannot be dropped. You will only be allowed pencils/pens and model kits for the exams.

Since it is possible that not all students will take the exam at the same time, it is theoretically possible for some students to receive advance knowledge of an exam. Students leaking test questions to other students that have not taken the exam is also regarded as academic misconduct and shall be dealt with accordingly.

I have been advised by the staff (some of them legal staff) that I cannot use pepper spray in dealing with wandering eyes. I will try to remember to remind the TAs proctoring the exams of that advice. If the TAs suspect anyone of this condition, they will announce for everyone to keep their eyes on their paper. If the problem persists, the TAs have the discretionary power to move any student suspected during an exam. **You must be above reproach.** Exams of adjacent students will be examined, and should there be ample evidence, lower exam scores including zeroes will be given to the perpetrator. Please fight against wandering eyes. Please shield your paper the best you can to remove any temptation from others.

DO NOT TRY TO CHEAT. I have failed students in the past and I will not hesitate to do so this semester. I have no patience or respect for those that cheat.

Study tips

Between 1-4 hours after each lecture, start the problem set. ***Do not wait for the answer key to be posted to start the problem set.*** Between 4-8 hours after each lecture, recopy your notes for that lecture. Look for the patterns.

Organic chemistry is very cumulative. Once you start, you cannot stop. (Oh and you need to start right away). Material on exam I will be tested again on exams II, III, and the Final. Likewise, with subsequent topics. The problem sets will not only cover current material but past material as well.

In the course schedule, the relevant page numbers from the text are listed. The exams are going to be based on the material from the lectures, lecture notes, problem sets, and discussions. The text is there to help you understand the material. I strongly suggest that you read the relevant pages either before or after lecture.

Make flash cards. Carry these with you wherever you go. Flip through them throughout each day.

A very good way to study is to study in groups. Multiple problem sets will be available to work on along with several practice exams. I suggest you form groups to study in. You can go about this by talking to classmates in discussion, etc... The sooner you set up these groups the better off you will be. If you wish a classroom to meet in, I can see about reserving one for you.

The best way to understand organic chemistry is constant practice. The TA's and I will do our best to provide quite a bit of practice in the form of problem sets and practice exams. Should you desire more practice, there are the problems at the end of each chapter in the book as well as multiple websites. Should you find a discrepancy in what the TA's, book, internet, or myself, please bring it to our attention immediately. It may be a case of a subtlety, an outright error, or an over generalization. Regardless, we'll try to explain the discrepancy.

Discussion Sections

Due to the generous funding by the Madison Initiative for Undergraduates and the College of Letters and Science, we are able to offer discussion sections. There is a lot of material to cover, and little time to cover it. Sometimes, what I can briefly cover in the lecture will be better covered in your discussion section. The TAs in this course have experience in teaching organic chemistry, through labs, discussion sections, and tutoring. They may have a different way of looking at a topic. As a result, if you do not understand something from me, you may understand it from them.

Section	Time	Room	TA
301	M 2:25-3:15 PM	Chem 2311	Diana Wang
302	M 3:30-4:20 PM	Chem 2373	Diana Wang
303	M 4:35-5:25 PM	Chem 2311	Diana Wang
304	M 12:05-12:55	Chem 2311	Diana Wang
305	M 2:25-3:15 PM	Chem B379	Dylan Holst
306	M 3:30-4:20 PM	Chem B379	Dylan Holst
307	M 4:35-5:25 PM	Chem 2373	Dylan Holst
308	M 12:05-12:55	Chem B379	Dylan Holst

Proper use of discussion sections:

Make mistakes. People learn from mistakes. Be vocal. Go to the front of the board and write your answers. If they are correct, congratulations. If they are incorrect, *all the better* as it gives an opportunity to learn something and help out your fellow classmates. There are many correct answers in organic chemistry (and many more incorrect ones). The TA's are there to give insight on the nuances of organic chemistry.

Improper use of discussion sections:

Just sitting there.

Additional Help

In addition to the TA's and my office hours, there are a couple of places where you can find assistance.

The Organic TA Office is in room B317. There is a schedule posted outside the door of various TA's and when they will be available to help you. Feel free to ask any of them for help even if they are not a TA for Chem 343.

Alpha Chi Sigma Chemistry Fraternity has offered tutoring for chemistry classes in the past. Please contact them about their current help sessions.

GUTS offers tutors as well. They can be contacted at:
Student Activity Center
Office #4413
333 E Campus Mall
Madison, WI 53715-1380
Phone: 608-263-5666
E-mail: guts@rso.wisc.edu
<http://guts.studentorg.wisc.edu/>

There are also private tutors available. The General Chemistry Office (Room 1328) has a list of tutors and prices.

There are also private tutors available. The General Chemistry Office (Room 1328) has a list of tutors and prices. If you do work with a tutor, please let them know that I post notes, problem sets, practice exams, and tutorials on canvas. Anyone can access that page by using the following url:

<https://canvas.wisc.edu/courses/174729>

JANUARY 2020

Chem 343

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Page numbers are from Organic Chemistry 6th edition Marc Loudon						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
		Classes Begin	Periodic Trends and Lewis Structures Pages 1-13	Tutorial: Nomenclature I Alkyl halides and alkanes	Bonding/Molecular Interactions Pages 22-38 and 334- 366	Tutorial: Nomenclature II Alkynes, Alkenes, Benzene
26	27	28	29	30	31	
	Hybridization Pages 13-19, 35-40, 125-133, 681-684	Tutorial: Nomenclature III Functional Groups	Resonance Functional Groups Pages 19-21, 95, 743- 745, 750-757		Resonance Functional Groups	Tutorial: Nomenclature IV Cycloalkanes and bicyclics
			NOTES: Lecture is from 9:55 to 10:45 MWF Educational Sciences 204 Discussions are on Mondays			

FEBRUARY 2020

Chem 343

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3 Alkanes Conformations Pages 45-78	4	5 Cyclic alkanes Pages 272-300	6	7 Bronsted-Lowry Acid/Base Chemistry Pages 96-121 and 698-701	8
9	10 Bronsted-Lowry Acid/Base Chemistry Pages 96-121 and 698-701	11	12 Review Exam I 7:15-8:45 PM	13	14 Lewis Acid/Base Chemistry Pages 87-121	15
16	17 Stereoisomers Enantiomers Pages 229-271	18	19 Substitutions: SN1 Pages 382-428	20	21 Substitutions: SN2 Pages 382-428	22
23	24 Substitutions: SN1 vs. SN2 Energy Diagrams 382-428	25	26 Eliminations: E2 Pages 382-428	27	28 Eliminations: E1 Pages 382-428	29
			NOTES:			

MARCH 2020

Chem 343

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 Carbocation Rearrangements Pages 460-463	3	4 SN2 vs. E2 Ether Synthesis Pages 513, 917	5	6 Alkynes C-C Bond Forming Reaction Pages 698-704	7
8	9 Leaving Groups TsCl, PBr ₃ , SOCl ₂ Pages 466, 470-471	10	11 Review Exam II 7:15 pm-8:45 pm	12	13 Alkynes to Alkenes and alkanes Pages 695-697	14
15	16 SPRING BREAK	17 SPRING BREAK	18 SPRING BREAK	19 SPRING BREAK	20 SPRING BREAK	21
22	23 Addition Reactions: HX and H ₂ O to alkenes Pages 146-175	24	25 Oxymercuration demercuration Pages 190-193, 514	26	27 Hydroboration Pages 193-196	28
29	30 HBr to alkenes Pages 203-219	31	NOTES: Drop Date is March 27 If you do not have 90 points by March 27, it is very unlikely you will earn a C in Chem 343.			

APRIL 2020

Chem 343

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 Dissolving Metal Mechanism/Alkyne hydration Pages 690-697	2	3 Epoxides and Neighboring Groups Pages 518-528, 539-547	4
5	6 Grignards, Organolithiums, Cuprates Pages 429-431, 529-531	7	8 Halogenation of alkenes Pages 181-185, 308-311	9	10 Radical Halogenation Pages 437-441	11
12	13 Cyclopropane Reactions Pages 433-437	14	15 Review Exam III 7:15 pm-8:45 pm	16	17 Osmium Tetroxide Periodic acid Pages 532-536	18
19	20 Ozonolysis Pages 198-202	21	22 Alcohol Oxidation Hydrate formation Pages 476-485, 963- 966	23	24 Conjugated Systems Pages 712-731, 741-749	25
26	27 Conjugated Systems Pages 712-731	28	29 Diels-Alder Pages 732-741	30		
			NOTES:			

MAY 2020

Chem 343

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 Aromaticity Pages 758-778	2
3	4	5	6 Chem 343 Final Exam 10:05-12:05 pm	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31			NOTES:			

Chem 343: Survey

Please answer the following questions so I can adapt Chem 343 to better suit your needs. Please turn this page in to Matt Bowman's mailbox in Chemistry 1146 by January 28.

What is your year? (Freshman, Grad Student, Returning Adult, etc...)

What is your major?

What do you hope to get out of this class? (Besides a good grade)

When is the ideal time for office hours (day and time)?

Do you learn a lot from textbooks?

What other classes are you currently enrolled in?

Add these numbers together:

946251.074373

9475780.400