

CHEM 341: Elementary Organic Chemistry

Contact Information

Matt (Doc) Bowman

262-2519

Chemistry 5232

bowman@chem.wisc.edu

(Please include Chem 341 in the subject line).

**3 credits: Lecture 50 min three times per week
Discussion 50 min once per week**

Lecture

MWF 11:00-11:50 AM

Room: Psychology 113

Office Hours

Scheduled

Mondays 9:55-10:45 AM in Noland 342

Mondays 2:25-3:15 PM in Chamberlin 2116

Wednesdays 3:30-5:25 PM in Chamberlin 2135

(or by appointment)

Teaching Assistants

Cara Schwarz

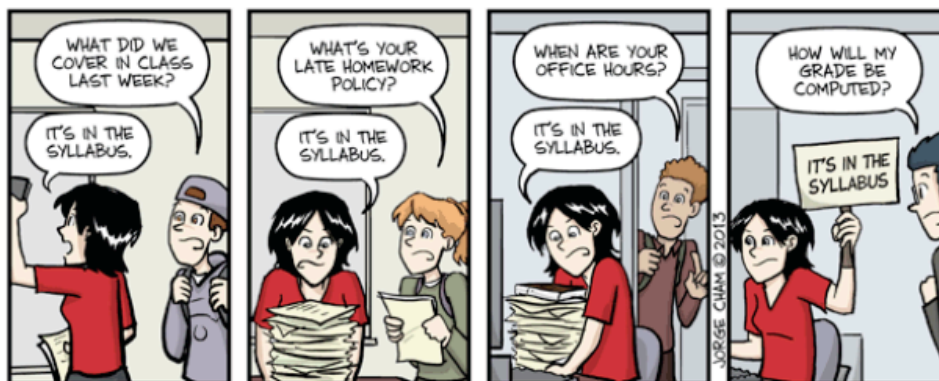
ceschwarz@wisc.edu

Aaron McCoy

amccoy@chem.wisc.edu

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.

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

Textbook

Essentials of Organic Chemistry by Dewick

The following textbooks are also available in the chemistry library on reserve:

Organic Chemistry: A Short Course by Hart, Craine, Hart and Hadid

Introduction to Organic Chemistry by Brown and Poon

Fundamentals of Organic Chemistry by McMurry

Essential Organic Chemistry by Bruice

There will be no problems assigned from the textbook. 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 chose the DeWick textbook as it covers most of the topics quite concisely and has good charts/diagrams. It is also quite a bit less expensive than the ones listed on the reserve list that can run upwards of \$150.

TA Office Hours

TA office hours on the day following exams will be cancelled as the TA's will be grading then.

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

Cara Schwarz

12:05-12:55 pm Tuesday

Aaron McCoy

9:55-2:10 pm Thursday

Matt's Schedule:

Matt Bowman this fall is lecturing for two courses Chem 343 and Chem 341. There are 310 students in 343 and 120 students in 341. Matt will try to keep everything straight, but will not remember necessarily which student is in which lecture. These lectures are almost back to back and at first contain very similar material, but halfway through the semester diverge. At which point, any vestiges of his sanity will disappear. (His sanity is not being helped much right now as Matt Bowman writes in the third person). Please state in any email correspondence with him whether you are in 341 or 343. The answer to your questions may differ significantly. Please be patient. If he does not respond within 12 hours, try again. There will be separate office hours for 343 and 341. Please come to the correct one.

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 Learn@UW. Please go through them **by** the indicated date on the course schedule. If you do not have access to powerpoint, there is a computer lab in Chemistry 1375. These computers have powerpoint. The lab is open from 8:30 am to 6:30 pm Monday through Thursday and is open from 8:30 am to 4:30 pm on Friday.

Video lectures

Learn@UW 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.

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 Learn@UW.

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.**

Participation points:

Part of your grade will be determined by participation. There are a couple of ways that you can earn a participation point. First, is attending your assigned discussion section. You get one point each time you attend. You will earn a half point for every correct answer to an iclicker question. Turning in a specified problem on a problem set into Matt's mailbox. There are other ways to be determined. There will be a maximum of 30 participation points that you can earn during the semester.

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. In addition, the TAs in this course have different experiences in teaching and learning organic chemistry. 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. All discussion sections are held in the chemistry building.

Section 302	Tuesdays	4:35-5:25	B351	Cara Schwarz
Section 303	Mondays	3:30-4:20	B355	Aaron McCoy
Section 304	Mondays	4:35-5:25	B355	Aaron McCoy
Section 305	Tuesdays	3:30-4:20	2373	Cara Schwarz

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.

Exams:

There are four regular exams plus the final exam. Each regular exam will be worth 100 points. The regular exams will be Wednesday evening exams held from 7:15 to 8:45 pm in a lecture hall to be announced. Please check your schedules for potential conflicts. The dates are September 24, October 8, October 29, and November 19. 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, December 17 from 2:45 pm to 4:45 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 Christmas. I'm afraid that is not listed as a valid reason.

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 Bowman that you are submitting an exam for a regrade. Write on the exam score sheet which problem needs to be regraded and why. **DO NOT CHANGE ANYTHING ELSE.** Place the exam in Matt Bowman's mailbox in Chemistry 1146.

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. You will only be allowed pencils/pens and model kits for the exams.

A percentage of the exams will be photocopied. Should an answer be changed and submitted for a regrading, academic misconduct has occurred and the perpetrator will receive an F in the course and be reported to the Dean's office.

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. 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.

Since iclickers will be used for points, there is the potential for academic misconduct there as well. Having someone click for you or using two or more iclickers during a single lecture is another example of academic misconduct. It will similarly be dealt with accordingly.

THERE ARE NO ACCEPTABLE EXCUSES FOR ACADEMIC MISCONDUCT. I HAVE CAUGHT SEVERAL STUDENTS AND THEY NOW HAVE A DARK MARK ON THEIR PERMANENT RECORD. I HAVE NO SYMPATHY FOR THOSE THAT CHOOSE TO CHEAT.

Philosophy

This is your education. It is what you make of it. Should at anytime you feel that I am going too fast, let me or your TA know. If you do not understand a concept, let me or your TA know ASAP. I've done my best to pick a set of organic topics that are interconnected, build on one another, and represent the basics of organic chemistry that are useful/fun to know regardless of major. If you do not understand a topic, it will continually haunt you through out the course, as the entire course is cumulative.

Organic chemistry has been compared to a science, an art, even a foreign language. It is pretty much all of those. In order to succeed in this course, you will need patience, vigilance, and imagination. There are three interlaced components to Chem 341: Structure, Mechanism, and Synthesis.

- Structure:* What does a compound look like? Is it happy?
requires imagination
- Mechanism:* How and why does a molecule do what it does?
requires pattern recognition
- Synthesis:* Can we get molecules to work together to form a new molecule (preferably of our choosing)?
requires strategy

Study tips

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, IV, and the Final. Likewise, with subsequent topics. The problem sets will not only cover current material but past material as well.

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.

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 talking to classmates in discussion, lecture, 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 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.

Additional Help

In addition to the TA's and 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 341.

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

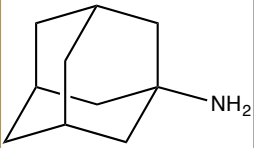
GUTS offers tutors as well. They can be contacted at:
Student Activity Center
Office #4413
333 E Campus Mall
Madison, WI 53715-1380
Phone: 608-263-5666
E-mail: guts@rso.wisc.edu

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 Learn@UW. Anyone can access the Learn@UW Chem 341 site by using the visitor login. They should go to learnuw.wisc.edu and click on visitor login.
USER NAME: **orgchem.pseudo**
PASSWORD: **orgchem.pseudo**
They will be able to access any handouts using that login.

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.

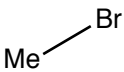
SEPTEMBER 2014

Chem 341

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1	2	3 Periodic Trends Bonding Pages 19-24	4 Tutorial: Nomenclature I Alkyl halides and alkanes	5 Periodic Trends Bonding Pages 19-24	6 Tutorial: Nomenclature II Alkynes, Alkenes, Benzene	7
8 Drawing good organic structures Functional groups Pages 10-15	9 Tutorial: Nomenclature III Functional Groups	10 Hybridization Pages 24-35	11	12 Resonance Pages 45-49	13 Tutorial: Nomenclature IV Cycloalkanes and bicyclics	14
15 Conformations and cyclic alkanes Pages 55-72, 83-88	16	17 Conformations and cyclic alkanes Pages 55-72, 83-88	18	19 Acid/Base Chemistry Pages 121-126, 155-165	20	21 Spot Checks Union South 4-7 pm
22 Lewis Acid Base Chemistry Exam I Review 6-8 PM	23	24 In Class Review Exam I 7:15-8:45 PM	25	26 Stereoisomers Enantiomers Pages 73-82, 90-92, 116-119	27	28
29 Substitutions: SN1 Pages 167-181, 183-203	30					
		NOTES: 1-adamantylamine is an antiviral that was once used to treat influenza but no longer. Side effects include "nervousness, anxiety, agitation, insomnia, difficulty in concentrating" according to Wikipedia. Yep, 1-adamantylamine is definitely a molecule to associate with organic chemistry.				

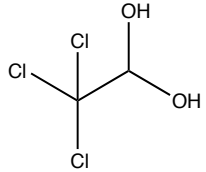
OCTOBER 2014

Chem 341

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
		1 Substitutions: S _N 2 Pages 183-203	2	3 Substitutions: S _N 1 vs. S _N 2 Energy Diagrams 183-203	4 Exam II Review 1-3 PM	5 Spot Checks Union South 4-7 pm
6 Carbocation Rearrangements Pages 439-441	7	8 In Class Review Exam II 7-15 pm-8:45 pm	9	10 Eliminations: E2 Pages 378-380 and 400-411	11	12
13 Eliminations: E1 Pages 412-420 and 436-440	14	15 Reverse E1 HX Addition to alkenes Pages 283-286, 296-304	16	17 Carbonyl Chemistry Grignard/NaBH ₄ Pages 235-241	18	19
20 Carbonyl Chemistry Cyanohydrin Pages 238-239	21	22 Carbonyl Chemistry Hemiacetal/Acetal Pages 221-234	23	24 Carbonyl Chemistry Imine Pages 242-244	25	26 Spot Checks Union South 4-7 pm
27 Protecting groups Exam III Review 6-8 PM	28	29 In Class Review Exam III 7:15 pm-8:45 pm	30	31 Carboxylic Acid Derivatives: Esters Pages 248-255		
		<p>NOTES: Bromomethane is a gas (boiling point 3°C). It is an excellent SN2 electrophile and a pesticide that was widely used in vineyards. It essentially alkylates DNA and the insect dies. Very toxic to us for the same reason. It also attacks the ozone layer. MeI is a likely substitute. Just as toxic, but the iodine radicals are less likely to break apart ozone than bromine radicals.</p>				

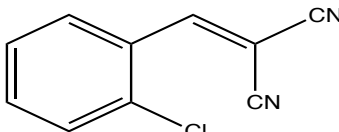
NOVEMBER 2014

Chem 341

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
					1	2
3 Carboxylic Acid Derivatives: Amides and Nitriles 262- 267	4	5 Grignards and Organolithiums Pages 240-251, 271-272	6	7 Lithium Aluminum Hydride: Pages 267-271	8	9
10 Oxidation of Alcohols PCC and H ₂ CrO ₄	11	12 Radical Chemistry Alkane Halogenation Pages 319-328	13	14 Synthesis Practice	15	16 Spot Checks Union South 4-7 pm
17 EAS: Deuteration Pages 304-317 Exam IV Review 6-8 PM	18	19 In Class Review Exam IV 7:15 pm-8:45 pm	20	21 EAS: Nitration Pages 304-317	22	23
24 EAS: Bromination Pages 304-317	25	26 EAS: Friedel-Crafts Pages 304-317	27	28 No Classes	29	30
		<p>NOTES: Chloral hydrate is an example of a stable hydrate due to the presence of three electronegative chlorines destabilizing the aldehyde. It is widely used in 1920 crime novels as knockout drops or "Mickies." On a historical basis though, it the cheap starting material for the infamous insectide DDT, which limited the spread of malaria and of the bald eagle.</p>				

DECEMBER 2014

Chem 341

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1 Aldol Pages 357-366	2	3 Claisen Pages 379-387	4	5 Michael Pages 397-400	6	7
8 Mannich Pages 369-372	9	10 Special Topic: Maillard Browning Reaction	11	12 Review Last Day Email topics to Matt	13	14
15	16	17 Final Exam 2:45-4:45 PM	18	19	20	21
22	23	24	25	26	27	28
29	30	31				
 <chem>Clc1ccccc1C=CC#N</chem>		NOTES: CS gas (more commonly known as tear gas) is actually a solid that melts around 93 °C. Typically, it is dissolved in an inert non-flammable solvent such as dichloromethane and packed into cannisters. Upon pulling a pen, a small incendiary vaporizes the solution and spreads it. It acts as a REVERSIBLE Michael acceptor to nucleophilic sites around the eyes. This causes the burning sensation.				

Chem 341: Survey

Please answer the following questions so I can adapt Chem 341 to better suit your needs. Please turn this page in to Matt Bowman's mailbox in Chemistry 1146 by September 12.

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