

Strategy for 8A Review – McMurry Chapter 1-11,14,15 – Start this ASAP!

Eaindar Soe will be holding weekly Monday CHEM 8B workshops, 2-4pm in PSB 257. The first workshop on January 8th will focus on CHEM 8A material. A full schedule of workshop topics will be posted on the CHEM 8B website during the first week of class.

The reactions and material in 8B assume retained knowledge from 8A. Reactions from 8A that students will be tested on in 8B will be at least mentioned in class, if not assigned in the HW.

- Work through the worksheets & exams on the CHEM 8A website
- *Fundamental Topics*: functional groups, resonance, arrow-pushing, nomenclature, stereochemistry (assigning R/S), & acid-base chemistry. **Every exam will have questions on functional groups and the following pKa's.**
 - See functional group Table 3.1 in the McMurry text, also on CHEM 8B website
 - HCl (-7), hydronium H_3O^+ (0), acetic acid $\text{CH}_3\text{CO}_2\text{H}$ (5), H_2S (7), phenols PhOH (10), ammonium NH_4^+ (10), water H_2O (16), acetone CH_3COCH_3 (19), ammonia NH_3 (35), and methane CH_4 (50)
- *Nucleophiles & Electrophiles* – by far the most important fundamental concept to understand the big picture in organic chemistry. As you review the reactions from 8A, make a list of nucleophiles & electrophiles (organize by functional group). Plan to keep this running tally as you learn new reactions in 8B.
- Know the reactions from Chapters 7-11 & 14 (alkenes, alkynes, organohalides, $\text{SN}1/\text{SN}2/\text{E}1/\text{E}2$, and conjugated compounds) – these reactions will come up again in lecture & HW. It will be obvious which reactions you need to know by the first exam.

When did you take CHEM 8A and how did you feel about it?

I did well in 8A last quarter and stayed on track! Use the time in between quarters and complete the practice exams on the CHEM 8A. Check your work and ask about challenging problems in discussion or office hours. The Chapter 8 and 9 worksheets are worth your time as well.

I struggled in 8A last quarter but made it through. Take 8A exam 1 and assess whether it's necessary to refresh Chapters 1-5. Read the Lecture 6&7 notes on chirality. Work through the Chapter 8 & 9 worksheets, as these contain a majority of the 8A reactions. Then, work through 8A exam 2. Refresh difficult exam 2 topics within Chapters 6-9. Work through Lecture 14&15 notes / problems on substitution and elimination as well as Lecture 17 on aromaticity. Then, work through the 8A final exam. Refresh difficult final exam topics from Chapters 1-11 and 14-15. This is worth your time, I promise!

I took 8A several quarters or years ago! Rather than jumping to the worksheets and practice exams, start with Chapter 1 and work your way through to the end. You can find a representative sampling of topics in the 8A HW assignment (see CHEM 8A website) without re-doing each problem (that could be an inefficient use of your time). Refer to the advice in the paragraph above. Take the practice exam after working through the appropriate chapters (exam 1 chapters 1-5, exam 2 chapters 6-9, and final exam cumulative chapters 1-11 and 14-15).

STUDY EXPECTATIONS & LEARNING ADVICE

Organic Chemistry requires more than just going to class and doing the homework. Make the most out of your experience by living the science nerd lifestyle – one where you spend at least 30-60 minutes every day with the material in some form. If done right, this class can be fun! **Establish a realistic study routine early and stick to it.** Update a calendar with your full class schedule and other time commitments. You may find certain days with less available study time and decide that work should be pushed to another day. **DO NOT plan on doing all of your HW for the week in 1-2 days or cramming just before exams.** Rushing the learning process adds unfair pressure and unnecessary stress! The learning process is fluid and changes often need to be made based on unexpected events. Stay organized to keep yourself from falling behind.

The McMurry text is well-organized and colorful, but there is a special strategy for learning from a textbook without losing interest or getting overwhelmed. Follow the steps below and you'll efficiently use each reading assignment 2-3+ times for lasting comprehension, rather than reading assigned text sections page-to-page in one sitting.

BEFORE LECTURES

- Use the **Reading Questions** online to focus on the assigned text sections
- Begin the in-chapter problems for that lecture's **HW assignment**
- **Review notes and complete the HW** from the previous lecture

Finish the previous lecture's HW assignment before moving on to new material. Find the responses to the Reading Questions for the upcoming lecture's text assignment. Spend 20-45 on those sections. Skim the **bold words, figures, mechanisms, and example problems**. Take another 15-30 minutes to begin the assigned **in-chapter HW** problems - at least write the question. These fundamental problems immediately follow the description of the topic and often have similar example problems above. You are not expected to understand everything at first but lecture will be much more engaging with these simple preparations.

****Plan for the next day before bed and eat breakfast before class****

DURING LECTURES

- Take thorough lecture notes using colored pencils or erasable pens
- Ask or make note of questions

Be on time and stay for the duration of every class. Keep your focus by making eye contact with the instructor frequently. Smiles and nods are nice 😊 Please feel free to ask questions or correct mistakes in a polite way. It can be difficult at times to write and listen so let me know if things are moving too quickly (just be nice about it please). Communication is key!

AFTER LECTURES

- Review your notes and start/continue **HW assignments** the same day of class
- Check your work with the solutions manual only after your best attempt
- Attend office hours regularly – instructor & TA
- Participate in discussion sections, bring your questions
- Keep a record of concepts/problems that are difficult for you
- Make an on-going reaction summary sheet and/or mechanism book

Re-write, or at least **re-read your notes** while supplementing them with the textbook on the **same day as lecture**. Watch the lecture webcasts to take down anything you may have missed. Re-do problems we did as a class that were challenging or confusing and come to office hours to clear things up.

STUDY EXPECTATIONS & LEARNING ADVICE

HW is your progress record and reference tool when preparing for exams. 'Future you' will be grateful to 'present you' for keeping an organized HW book. Color helps!

Complete the HW as you get to each problem in the reading. **Write the question in black or blue** including all structures, given names, and reagents. Use the text and your lecture notes for help with problems before turning to the solutions manual. **Write your responses and work in pencil** – don't be afraid to make mistakes, just try. Use the solutions manual to **self-grade your HW in red**. If your HW is complete and correct, you should get 100% on the quizzes! Try to understand why any of your answers were incorrect and how to do it on your own in the future (you cannot use the solutions manual during exams!). These are great problems to bring up in discussion or office hours. Make a note to **re-do those problems** within the next few days.

Completing each HW set once is not enough to do well on the exams (can you recall in detail the problems from a few days or weeks ago?). Each weekend, **re-do** as many HW problems as possible from the previous week's lectures. The in-chapter problems should touch on each new topic or reaction in a simple way. Don't just look at the HW and think, "I can do that." **Actually re-work the problem again, as if you've never seen it before.** Eventually, you will do this without referring to your book, notes, solutions, or old HW. You will not have these resources during the exam. Relying too much on these tools will give you a false sense of confidence.

LEARNING TOOLS – The learning process really gets fun when you organize the material in different ways to see the big picture. Try to decipher the patterns in reactivity and you'll be on your way to a solid understanding of organic synthesis. While the primary learning tool will be the HW, students will safely challenge their knowledge in **discussion and MSI sessions** and making **study sheets**. TAs and MSI tutors will explain the intentions for their sessions with you.

Mechanism Notebook. Proper arrow pushing is a necessity for passing organic chemistry and understanding the material rather than memorizing. Add one full reaction and mechanism per page with references to the chapter or lecture. Check your mechanisms with lecture notes, the text, and/or in office hours. You are not responsible for the mechanism for every reaction. There are notes on mechanisms and material not covered in the Reading Questions and announced in class. As a general rule, if it's covered in lecture or the homework, you are responsible for it. (same applies to reactions from 8A). If you are unsure of details for specific reactions, you may ask specific questions but the instructors cannot possibly review every reaction you should know!

Make a *reaction summary sheet* and add to it as you work on the HW. Try categorizing each reaction by functional group (Ex. Forming Alcohols, Reactions of Alkenes). Keep the detail to a minimum and use this summary sheet to help with future problems. I highly recommend limiting this to one page, using different colors, and re-writing the summary sheet when it starts getting out of order. Gradually use it less and less as exams approach.

Other Tips for Success and/or Maintaining Sanity

Stay organized: Be a nerd about this. Seriously. *Patience:* Some things will not make full sense right away and letting this bother you only slows your progress. Instead, accept it and enjoy the process. **Avoid comparing yourself to other students.** Expect to learn at a different pace than your classmates and accept that it is ok. College is actually about figuring out how *you* learn. *Breathe and Get Out!* When feeling frustrated, take three deep breaths and try to start again fresh. Stress and frustration can also be alleviated with physical activity. Students tend to get caught up with classes, labs, studying, partying, eating, etc. and exercise falls by the wayside. If you are feeling particularly overwhelmed or otherwise stuck, try going for a walk, run, or a bike ride. Sometimes when you just want comfort food, you'd be better off getting some exercise or at least some fresh air. Perhaps most importantly...**SLEEP!!!**

STUDY EXPECTATIONS & LEARNING ADVICE

STUDYING FOR EXAMS

- Set 2-week reminders on your calendar to get yourself into exam mode!
- Create test-taking scenarios regularly: set a 1 hr, 35 min timer and **re-do HW problems** without referring to notes or keys. Do the same with **practice exams**.

Studying with groups is great, but it has to be in addition to studying alone. Your classmates cannot help you during the exam! The most sure-fire way to succeeding on exams is re-doing HW problems and reading your detailed lecture notes. **Don't just look at a problem and say, "I know how to do that" - actually write it out again. Wasting paper may be an unfortunate but necessary fallback.**

Practice exams are provided online, but keep in mind that the material cut-off for certain exams may be different. Your best bet is to re-work the homework problems and use the practice exam as a final skill-check.

At least once a week (whether or not an exam is coming up), set a timer for an hour or more and re-do as many homework problems as you can or a practice exam without using your notes or solutions. The idea is to re-create the test-taking environment to limit test-taking anxiety. It's like a scrimmage for the big game! Check your responses with answer keys and bring up any issues in office hours or discussion.

Many exams questions may come directly from the homework! Please pay attention to in-class announcements about the exams. *The Q&A sessions before exams are not review sessions.* You are highly encouraged to come to office hours before an exam with *specific* questions. If you ask a general question like "what will be on the exam?," our answer will be "use your lecture notes and homework to figure that out."