Blank Mechanism Sheets To Help Learn Mechanisms (pdf's).

Comprehensive Reaction Study Sheets (pdf)

Brief Reaction Summary (pdf)

Complete Semester Roadmap Template (pdf)

Study Tips from a Fall 2019 Student Survey

How Can You Succeed in Organic Chemistry? I know that you lead complicated lives, and it is important that you are as efficient as possible when it comes to learning Organic Chemistry. <u>Click here for advice from last year's class in the form of an end-of-year survey that says</u> <u>exactly how they succeeded.</u> Read that first. Now, after you have read that, here is everything I have learned about making your study time as efficient and effective as possible.

Preparing for Exams: What Does Learning Science Tell Us? Decades of learning science has provided great advice for studying effectively. Here are suggested tasks that are consistent with the most effective learning techniques to emerge from extensive research. When you prepare for an exam, you should:

- 1) **DO THINGS, do not just reread things when you study.** Generate things and have specific tasks to accomplish. That is the most efficient and effective way to learn!
  - A) Use your class note summaries as a primary source of information when preparing for exams. Throughout the semester, you should prepare summaries, in your own words, of your lecture notes in the form of outlines you generate. DO NOT just reread your lecture notes. See "3) Be the best student you can be all semester" below for more details. You need to be doing this during the entire semester.
  - B) Watch lectures again and take notes to review what you do not understand. Use the <u>Rules Of The Day</u> as a guide to help you find which sections of old lectures you need to rewatch. Consider rewatching them at increased speed to save time. <u>Previous classes say this really works.</u>
  - C) Fill in blank mechanism sheets. <u>Click here to get copies of blank mechanism sheets</u> from the entire semester. This is the best way to learn mechanisms.
  - D) Fill in complete roadmaps from memory. <u>Roadmaps put all the reactions you will learn</u> <u>in context</u>. You will need to be able to fill one in from memory to make sure you know all the reactions, and how they work together during synthesis. <u>Click here to get a blank</u> <u>roadmap template for all of the reactions we will learn this semester</u>. <u>Click here for a filledin roadmap that covers all reactions through Chapter 9</u>.
  - E) **Practice working reactions backwards to help with synthesis**. Study with a friend, and both of you should do the same thing. Write down a starting molecule, then carry out a

reaction on that starting material. Write the product. Now using your roadmap as a guide, write as many different reactions as you need so that you cover the reactions in the roadmap. Show your friend only the products, and only look at your friend's products. Both of you then guess the starting molecules and reagents for each product. This is the best way to learn how to work backwards during synthesis problems.

## 2) <u>AFTER you are finished with the above tasks, work through the old exams as your final preparation.</u>

- A) You need to know the material first, but research shows that practice exams are the MOST EFFECTIVE test preparation of all. I have now posted all of my previous exams (with and without answers) dating back to 2006 to help with your exam preparation.
  PRACTICE, PRACTICE, PRACTICE!! One caveat here is that the course material and emphasis has changed over the years, and it will continue to evolve. The most recent exams should be the most similar to the level and types of questions you will see.
- 3) Be the best student you can be all semester long. Doing well requires effort the entire semester, not just prior to an exam. In fact, cramming only before exams does not work for classes like O Chem. Here is what you need to do to succeed in this class and all of your other classes as well.
  - A) **Go to class every day and take great notes.** These notes will be your primary source of material for the course Psychologists have a detailed explanation for why going to class is important. There are studies indicating that you will make a much better connection with the material when you are there in person. I have my own evidence I obtained myself. On a randomly chosen day during the semester, we took roll by giving a surprise quiz that was turned in. After the semester was over, we tracked the final grade distribution of the students who where present that day and compared it to the grade distribution of the students who chose not to attend class (the quiz was not announced ahead of time). Click here to see a copy of the original data. The bottom line is that the students attending class averaged a full grade higher than those not attending (B vs. C average). Most important, 70% of the students who ended up getting an A were present in class. Even more compelling, almost all of the students who ended up failing the class were not present in class.
  - B) **Outline the lecture notes every week.** That is, rewrite your notes using the fewest possible words, in outline format, with arrows connecting related ideas. The best way to think about this is the following: Pretend you would be allowed to bring a few pieces of paper, i.e. "cheat sheets" to each exam\*. What would be on those pieces of paper from the lectures that would guarantee you would get 100% correct on the exam? Make those sheets that cover every week. I will emphasize this again. You need to do this every single week, not just before the exams! \*Sorry, we give only closed book exams.

- C) **Outline the reading sections every week.** You will have reading homework assigned after almost every class. Put together outlines of this material every night. Don't just "read and forget", make an outline while you read. It really does not take long.
- D) Keep your roadmap up to date every week. A roadmap shows all of the types of organic molecules (alkanes, alkenes, alcohols, alkyl halides, etc.) and with arrows drawn between them, the appropriate reagents and/or reaction conditions written over the arrows, and the stereochemistry/regiochemistry written below the arrow as applicable. Preparing a roadmap is the very best way I know of to keep track of reactions and mechanisms so that you can use reactions in synthesis problems. It gives you the "big picture" in a straightforward way. Roadmaps are the best way I have ever found to help students understand how all of the chemical reactions we study fit together in a way you can use them. For a much more detailed description of a roadmap, <u>click here.</u>

## E) Reasons to use the above outlining method:

- i. Organizing your class notes/reading into summaries/outlines will greatly increase the learning process by organizing the important concepts in your mind.
- ii. Organizing your class notes/reading into summaries/outlines will also focus your attention on any problems you have understanding the material before it is too late.
- iii. You will then be prepared to better comprehend the material presented the following week in lecture. New material invariably builds upon old material. Never get behind!
- iv. Did you see what I said there? **NEVER GET BEHIND. I repeat, NEVER GET BEHIND.**
- v. Your study time has been broken down into tasks. When you are done outlining and filling in your roadmap, you are finished. Go have fun.