

**CHEMISTRY 345 - Spring 2011**  
**(Honors Section, Prof. Gellman)**

**RECOMMENDED STUDY HABITS**

1. Study regularly and often (every day, if possible). This course covers a large amount of material, and many of the concepts are difficult to master. You are most likely to succeed if you are methodical in your study habits.

2. Recopy your class notes within 24 hours of the lecture. Many important facts slip by during lecture before you can record them but remain in your short-term memory. Recopying gives you the opportunity to set down the full story, and cements your grasp of the points made in the lecture.

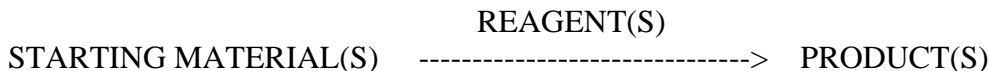
3. Read each chapter completely. There is not time for all important material to be covered in lecture, and some key points will be left for the text to explain.

4. Write out the answers to all assigned problems **before** you look at the printed solutions. It is notoriously easy to look at a problem, think for a moment, look at the printed solution, and then tell yourself, "oh yes, I knew that." You can gauge your progress in the course by whether you can do the book problems without looking at the answers. Furthermore, each problem helps anchor some concept in your mind. Every time you look at the answer before writing out the answer to a problem, you lose most of what that problem could have taught you. Use your performance on the problems to identify the concepts you have not mastered. If you cannot do the problems, you probably can't succeed on the exams.

5. Look for relevant problems in other organic chemistry text books, and work those problems, too. It is a commonly heard analogy that learning organic chemistry is like learning a foreign language. The more you practice, the greater your facility will become, and the more successfully you will perform on exams.

6. Organic Chemistry is a difficult subject because there is a great deal of information that must be committed to memory before you can master the conceptual material. For the material that must be committed to memory, passive studying (i.e., multiple rereadings of text and lecture notes) has only limited effectiveness. Active studying is preferable; active study techniques for two important types of knowledge are listed below.

(i) New reactions. General form of information:



Study approach: three sets of flash cards.

- (a) "Question side" has starting material(s) and reagent(s), "answer side" has product(s).
- (b) "Question side" has starting material(s) and product(s), "answer side" has reagents(s).
- (c) "Question side" has reagent(s) and product(s), "answer side" has starting material(s).

(ii) Reaction mechanisms. Study approach: maintain a list of the important mechanisms discussed during lecture, and periodically practice drawing out a complete version of each important mechanism *without looking at your notes*. "Drawing out a mechanism" means proceeding from starting material to

product, drawing each intermediate, and showing the flow of electrons (with curved arrows) that occurs in each elementary step of the mechanism. Many mechanisms are also discussed in terms of energy diagrams (energy on vertical scale, reaction coordinate on horizontal scale), in which starting material, product and intermediates are concave up points (minima on the curve), and transition states are concave down points (maxima on the curve). Energy diagrams and "curved arrow" mechanisms are complementary methods of representing a reaction.