

## CHEMISTRY SURVIVAL TACTICS

Speaking very roughly about a five unit course, 15 hours a week of study time outside the classroom is an average amount of time for an average student to get an average grade. You can expect to do better, of course, if you put in more time. Daily work is very important: cramming before a test will do little more than make you feel overwhelmed.

### I. BASIC STUDY STRATEGY

- A. Pre-read before lecture
- B. Take good lecture notes
- C. Review notes (same day as lecture )
- D. Read textbook selectively ( same day as lecture, if possible)
- E. Do homework problems (even if optional)
- F. Make flash cards to include definitions and formulas
- E. Take a practice test

### II. IMPORTANT COMMON (?) SENSE RULES

- A. KEEP UP WITH READING ASSIGNMENTS
- B. DON'T MISS LECTURES
- C. SOLVE MANY PROBLEMS
- D. HAVE A SCIENTIFIC CALCULATOR AND KNOW HOW TO USE IT. (USE ITS INSTRUCTION BOOK).
- E. USE OF DIMENSIONAL ANALYSIS (THE UNIT CONVERSION FACTOR METHOD) IS AN ENORMOUS HELP IN PROBLEM SOLVING.
- F. DON'T GET BEHIND ON HOMEWORK
- G GET HELP FROM T.A. OR OTHERS
- H. GROUP STUDY CAN BE BENEFICIAL

### III. NOTE TAKING/LECTURES

- A. Pre-read before lecture
- B. Get to class early ; leave late (little bits of information come out at these times)
- C. Take useful notes (more than just board work)
- D. Good notebook organization (lecture notes on one side of notebook, reading notes on the other side)
- E Leave space for incomplete notes (fill in later)
- F Draw relationships (improves memory)
- G. Review as soon as possible after lecture class

### IV. READING THE TEXT

Try the PQRST method (Preview, Question, Read, Study, Test)

#### A. Preview

1. Read the introductory paragraph and the chapter summary (at the end of the chapter) to get an overview of the chapter. Also scan the key terms and equations listed at the end of the chapter.

2. Read headings (to note important topics, organization of material and how topics follow each other).
3. Look at all pictures, graphs, diagrams, tables and read the captions. A review of these visual aids will help in your comprehension when you begin reading: illustrations often convey information that cannot be briefly expressed in words.
4. Note the example problems and use them as a guide to important material.
5. This preview should take about 5 or 10 minutes.

#### B. Question

1. While you are previewing, ask yourself questions about what you do not know. Turn headings into questions. This will arouse curiosity which will help later to increase comprehension. Ask what, how, or why (and sometimes where and who) about each subheading.

#### C. Read

1. Read actively to answer the questions you asked yourself.
2. Understand important terms, especially any *italicized* or **bold-faced** words or phrases.
3. Read everything assigned, including all pictures, graphs, diagrams, tables and their captions. Analyze these carefully.
4. If you do not understand a paragraph after re-reading it two or three times, note your question specifically in the margin and read on. Oftentimes the question is answered in the next paragraph. Continue reading the whole chapter in this fashion.
5. When reading, first try to do example problems while covering the solution with a card. Do the problems neatly so that you can review them later. Check your whole solution with the text's approach. Mark your errors and learn from your mistakes.

#### D. Study

1. This is not re-reading the chapter and lecture notes again and again. Read selectively, studying important points covered in lectures. Try to answer the questions you noted in the margins. Save these for later if you can't get them after a short while. You may get them later or you may want to ask someone. **BUT DO NOT WAIT TO BEGIN SOLVING PROBLEMS.**
2. **THE MOST IMPORTANT PART OF STUDYING IS TO SOLVE MANY PROBLEMS.** Work carefully and do not try to solve with speed when you are first learning the material. (See PROBLEM-SOLVING below.)
3. You may want to rewrite your lecture notes. Check unclear areas by use of the text.
4. You may want to prepare flash cards of all new vocabulary, definitions, mathematical equations, rules, sample problems, *etc.* Try to recite the cards from memory. You may want to jot down key words from the cards to aid memorization.
5. Go beyond memorization and get background information. Use your study guide. The index can also be used as a study aid.
6. Set a regular time to review concepts and problem types from previous chapters (for example, a couple of hours from each weekend).
7. Is there a type of problem you tend to make? You may want to list these on a reminder sheet to use as a correcting tool.

#### E. Test

1. This is self-testing. Try to solve example and homework problems you missed in the past. Attempt some problems you have not done in the past and strive for correct solutions while also increasing your speed. If you make careless mistakes, try to concentrate more (this usually also involves going slower). The harder the problems are for you, the more of that type of problem must be solved to make the hard, easy.

2. Use your flash cards until you know every one of them perfectly without hesitation.
3. Simulate a test taking situation by allowing yourself 50 minutes on a practice exam.

## V. PROBLEM-SOLVING

Your understanding of concepts, definitions, and formulas is of little value unless you can solve problems.

A. Sort information in word problems by:

1. Determining what is wanted (You may want to circle this.)
2. Examining the given data.(You may want to underline these.) .
3. The connection between the wanted and the given may not be clear. Drawing diagrams, writing reactions with quantities under each reactant and product, visualizing, verbalizing, and brainstorming--all are useful ways to understand the problem.

B. SET SUB-GOALS: Ask yourself, "What do I need to know to be able to solve this problem?" Find any missing pieces of information.

C. In a multi-part problem, you must select from all the given data that which is needed to solve each part of the problem. Occasionally too much information is given.

D. Some problems will omit obvious information. (This information may be tabulated in the text or in an appendix, or, if it is an exam, on the first sheet of an exam.)

E. Use dimensional analysis: that is, use the units of the quantities involved to check the set-up of the problem and to be sure the answer has the correct unit(s).

F. Question the values you got from your calculator. Do a quick mental check in your head, if its not too difficult, to see if the magnitude of the figures are reasonable.

G. Ask if the answer makes sense.

## VI. EXAM-TAKING

The vast majority of problems on an exam will be quantitative, not essay or subjective. Even if you get a multiple choice test, it will have almost entirely quantitative problems.

A. Prepare properly

1. regular review
2. predict questions (format, test style, number of problems, *etc.*)
3. make a detailed study schedule
4. set priorities (what's most important; or what you don't know at all)
5. make a practice test (if they aren't on file in the library or on sale at Classical Notes.) This will show what you need to study more and also help relieve test anxiety.

B. Assess the exam before beginning

1. make time allotment for test period (so many minutes per question).
2. gain points where possible (do heavily weighted questions first, if you can; leave very difficult questions for later)
3. analyze the questions, circling or underlining key words and jotting down any thing that occurs to you as possibly useful.

C. Start working

1. write clearly
2. use pencil
3. evaluate answer (does it make sense?)
4. check over entire test for silly errors

D. Go Home and Relax.