

How to Study in Science Class

Modified from: Academic Skills Center, Dartmouth College and Uno, Gordon E. 1997. *Handbook on Teaching Undergraduate Science Courses*.

Knowing how to approach the material is the first step in succeeding in a science course. Most students do not lack the intellect to succeed in science; instead they lack the study skills. The amount of material covered, and the speed at which it is covered, may seem overwhelming; by following these guidelines, your stress level will decline as your success increases. There are three elements to succeeding in a science course: Lecture, Time Management, and Test Preparation.

I. Lecture: Usually, everything you need to know for the exam will be covered in the lectures. To get the most out of lectures, consider the following:

A. Attend every lecture.

1. Go to lectures alert and awake and sit upfront, away from friends and distractions.
2. If it was lectured upon it is important. Anything is fair game on the exam.
3. If you miss a lecture, get notes from at least 2 people. Don't pester your professor for notes – instructors don't take notes.

B. Prepare for lectures.

1. Before class, skim the text reading that corresponds to the lecture outline. Be sure to also inspect figures, tables and their captions (they are gold mines of condensed information).
2. As you skim make a list of key concepts and terminology. Bring this list with you to class to help you take notes.

C. Take good notes.

1. Write enough that you can **remember everything** that was said. Your notes need only make sense to you, but they must make complete sense! Don't try to write everything down. Additionally listen for terms that are repeated frequently or for key phrases like, "this is important", or "you should know" – be especially sure to write these down.
 - a. Use an outline format (forces you to organize the material)
 - b. Leave lots of room for later additions, ease of finding items, adding examples, etc.
 - c. Annotate your notes with things that remind you to:
 - i. ask a question
 - ii. clarify a point
 - iii. refer to a diagram in the textbook
 - d. Avoid trying to copy complex diagrams during lecture
 - i. make a note to look up a figure in the textbook or to copy the figure later
 - ii. listen to what is said about the figure (take simple notes)
 - f. Include drawings and examples. Both will help you remember the main point of the lecture
2. If your instructor provides audio recordings or if you audio record lecture, use the recordings to review parts where you didn't get the information down (don't re-listen to the whole lecture!)
3. Participate fully, discussing with a neighbor (when appropriate), filling out worksheets, etc.
4. Find a "Note Buddy": Photocopy and swap notes with someone after class every day. Meet once a week and teach each other the notes. This is important: Can you explain your notes to someone else? Write your own questions from your notes and practice answering them with your buddy.

wk 1 wk 2 wk 3 wk 4 wk 5 wk 6 wk 7 wk 8 wk 9 wk 10

II. Time Management

A. **Start early**

1. Use the first 2 weeks of the term. Don't fall behind because it quickly becomes difficult to catch up.
2. Soon after getting an exam returned, correct questions you got wrong and try to figure out why you missed them. If you have trouble figuring out why you missed them, visit your professor during office hours (after you've reviewed them yourself).

B. **Set and meet deadlines**

1. Make a term calendar with important deadlines (exams, reports, assignments, homework, etc) for *all* your classes.
2. Set your own internal deadlines. Notice where deadlines bunch up and space things out by setting yourself a deadline to do some items earlier.
3. Set deadlines to have all **studying** done 2 days before the exam – you'll then have 2 days to **review**.

C. **Schedule your "Bio Hour"**

1. Spend some time within 24 hrs of each class studying, supplementing and condensing your lecture notes. Otherwise, you will lose from memory 60% to 70% of what you heard/saw in class.
2. Specifically, spend 1 to 1.5 hours each "bio hour" and break up the time: ~ ¾ toward improving/condensing/studying your notes and ~ ¼ preparing for next class.

III. Test Preparation

A. **Condense the material** (don't copy it!). Here are some options:

1. Make flash cards over your notes. Do not waste time making cards for concepts or terms you already know.
2. Condense your notes for each chapter into a summary sheet. If you are a visual learner keep it organized and use different color pens (e.g. to indicate headings for different concepts and vocabulary terms).
3. Develop a graphic organizer like a flow chart allowing you to synthesize concepts and information.

B. **Spend the bulk of your time *studying***, not making study materials.

1. When studying, use the text to supplement all concepts covered in class, to fill in gaps, and to help answer your questions. Simply reading your notes and textbook like a novel from first page to last is not going to help you as much.
2. At the beginning of the year locate a regular study place where you will not be distracted and will not fall asleep. Your room might not be the best place ☺
3. Test yourself **repeatedly** from your notes and study materials. Write your own questions – this forces you to think critically about material, and helps you prepare for the kind of thinking you will have to do when you take the exam. Ask the hardest questions you can think of!
4. Talk through answers **aloud**. It will improve your retention and takes a lot less time than writing. Do this with a study partner or alone (the latter generally involves less distractions).
5. Know the details and supporting examples.
6. Try to draw pathways, relationships, etc. on paper or a chalkboard.
7. Know all the figures that relate to the lecture.
8. Know the terminology. If you can't speak the language...

C. **Apply the material:** As you study, think of applications for the material. In other words, how are the concepts used in the "real world"? What do these concepts mean to *you*?

REVIEW BOTH SIDES OF THIS SHEET EVERY WEEK DURING THE TERM TO SOLIDIFY YOUR GOOD HABITS!