How to Pass a Math Course – for college-level math courses
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Hang Onto and Use Your Syllabus!

If it is in the syllabus, we will do it. If it is not, we will not. It contains everything that will be demanded of you, and a wealth of other useful information.

The lists of assignments to be done and tests to be taken are in there, plus a "rough schedule" of when these items are due or will happen. That schedule usually pins things down to the week that these items will occur. Updated details usually will be announced in class to firm-up that schedule "to-the-day".

The materials you need to supply (including textbook and any software) are listed in the syllabus. The schedule in the syllabus usually allows the first week of class as a "window" in which to obtain these items without getting hopelessly behind in your work. However, it is *highly recommended that you be fully equipped by the second class day*.

Use the MyLearning2 website (and the Hawkes Learning site as applicable)!

A class-specific syllabus, and quite often other useful information, will be posted on the MyLearning2 site. If you lose your copies, download others from there.

For classes not using the Hawkes Learning software, the electronic gradebook will be kept on the MyLearning2 site. Students may check their progress there at any time.

For classes that do use Hawkes Learning software, the electronic gradebook will be kept on the Hawkes Learning site. The address and instructions to get there will be in the syllabus. A duplicate gradebook will not be kept on MyLearning2.

At present, TSTC math courses that use Hawkes include DMTH 0050, DMTH 0100, DMTH 0200, and MATH 1314. The rest do not.

Why Do You Have to Learn Math?

No matter what you do for a living, sooner or later you will have to figure out the answer to a "what", "how soon", or "how much" question. The answers to these are invariably numbers, and it takes math at some ability level to figure such a numerical answer.

Of course, not all problems encountered in any given profession require all the content of any particular math course. But the experience of thousands of people over the decades clearly shows that, sooner or later, in one job or another, you will bump into a problem sometime, that will require something we taught you in a DMTH 0200, TECM 1343, MATH 1314, or MATH 1316 course. In part, this is because it is very likely you will hold a number of different jobs over your career.

How to Learn Math, and What Not to Do

Math is very much like sports: it requires practice in order to perform well. Unlike sports, math trains the mind instead of the body, but that is the only difference. These "math things" that we teach are analogous to knowing how to run the plays on the football field.

"*Practice makes perfect*" and "*we learn by doing*" are ancient clichés that just happen to be very true. They most especially apply to math. You cannot learn how to solve math problems without solving a lot of math problems. This is called "experience", and (another ancient cliché) "*experience is the best teacher*".

The more problems you solve, the better you will get at finding the right answers.

The more problems you solve, the faster you will get at finding those answers.

Speed and accuracy are the overall objectives of any math course.

Test time is like the crucial ball game: you cannot still be learning the plays if you expect to win that game. Likewise, you must learn to use the math tools and procedures, which means you need lots of practice, before you get to that quiz or test.

The absolute worst thing you can do in a math class, is to be looking through the book during the test for basic knowledge of how to solve each test problem. You should have learned how to solve these types of problems long before the test. There is simply not nearly enough time to search out such information in a time-limited test.

The second worst thing you can do is to be flipping through the book looking for a similar problem to use as a "template" for solving your test problem. There are too many pages to search, and the test is too time-limited. You should have learned and practiced beforehand: the trick is already knowing exactly what to do, before you get to the test.

The third worst thing you can do is not use all the resources available to you to ensure your own learning. This includes the textbook, which is a storehouse of useful stuff. Most students hate math books because they are so "hard" to read. Actually, there is a way to read them and quickly find what you need. See "how to read a math book" below.

The fourth worst thing you can do is skipping class. Something important is going there nearly every single meeting. If you miss something, you alone are responsible for finding out what it was, and getting the associated work done on time, anyway. The more you miss, the harder this is, and it doesn't add up against you, it multiplies against you. That's worse. It is so impossible to succeed, that TSTC has a school-wide policy of issuing an "F" to any student who misses more than 25% of the class meetings. The teachers are free to use even tighter restrictions on absences, and many do.

The fifth worst thing you can do is to expect the math class experience to be like the video game experience. Learning math is not "see-and-respond", it is "go-and-do". Every math teacher has a different style and detail methods, but all have the same objectives and overall approach: ***we show you the types of things you are expected to do, and we show you how to do them***. It is up to you to practice doing them until you are good at it. Yet another ancient cliché applies perfectly: *"you can lead a horse to water, but you cannot make him drink*". You-the-student must do the drinking.

How to Read a Math Book

A math book is unlike any other book you have ever possessed. The style and organization are almost completely backward, compared to all other types of books. Once you understand that, they become easy to read and to use.

A math book is written by an academic professor in such a way as to impress other academic professors, so that they will recommend his book, and so it will sell. That means absolutely everything about every possible topic is in there, and it is presented in such a way as to be "elegant" to the expert reader, instead of clear to the novice reader. The main points are completely buried by so many details that "*you cannot see the forest for the trees*", to quote still another ancient cliché.

Therefore the last thing you want to do, is to try reading it front-to-back, like a normal text of English prose.

Look first at the table of contents. There are the names of the various topics you will be expected to learn, and more-or-less the order of their presentation in the class. (Use the syllabus to eliminate those that the class will not cover.)

Then turn to each chapter and look for a list of topics or subheadings. This is the next level of detail down in the outline. There, too, are more names of the tools and procedures that you will have to master. Names are important, see "index" below.

Then look through the section for things in yellow or blue boxes, at the pictures and graphs, and at boxed or highlighted equations. These are presented like this specifically to call your attention to them, which means they are of critical importance. Looking first at these items should give you some idea of what the section is about, especially if the particular topic is one you have seen before.

The last thing you look at is the text words themselves. All the details are buried there, so many as to obscure the point the author is trying to make. Dig the details out only if, and as, you need them.

Once you have seen the class presentation of this topic, and you have actually begun to work these kinds of problems, look again through this section. All of a sudden, it will finally make perfect sense, precisely because you have now already been shown the

point the author was trying to make (which is what the classroom lecture experience is really intended for, in a math course).

Once lecture and book together make sense, this is the time to use the book and your class notes to condense the information you really need into a "formula sheet". Not all professors hand out ready-made formula sheets, but most allow you to make your own, and to use them on tests.

How to Actually Use a Math Book

The reason we give these topics and tools names is to make an ***index*** possible, for very rapid access to things you might have forgotten. The index is always located in the back of the book. Learn the names in class as you go. Then use the index to quickly find the few pages where this topic name was used. One of those pages will have the information you seek. That way to find things is very, very much faster than just flipping through the book scanning for your topic. The book has too many pages for that technique to be practical, and it is way too easy to miss seeing it as you scan through.

Most books also have the answers to selected problems in an appendix at the back of the book. Learn where this is, and make good use of it. What you want to do is use these answers to check your work, not to shortcut actually doing the work (what you yourself do not do, you will not learn). Work and re-work your problem, until you figure out how to get the book's answer. If you cannot, then that is one of the questions you need to pursue in the next class meeting. (Once in a "blue moon", the book will be wrong.)

Some teachers assign the problems without the answers in the back of the book. In that case, find one similar to yours that does have an answer in the back, and work that one first. If upon checking, you find that you worked it correctly, odds are that you also will work (or have worked) correctly the one that you actually have to turn in.

A Recommendation for On-the-Job After You Finish School

Keep your formula sheets and similar notes or handouts, even if you sell back your textbooks. Stash these in a notebook in your personal "library" at home. Chances are, you will need certain pieces of this information, some day, somewhere.

For each job you hold, you will probably keep a personal notebook or "goodie" book, which has in it the "library" of information, and the associated information-manipulating "tools", that you need to perform your daily job duties. Pull out any of your old math "cheat sheets" that may apply, and stash them in your current job's "goodie" book. It really helps to keep needed information very close at-hand, on the job.