

## Tips for passing my class

Here is a list of things that may help you to pass my class. You may not agree with all of these and some may not help you but I suspect that most of these will help at least some folks pass my class.

**Background** – A lot of people get frustrated with having to take prerequisites for classes but they are there for a reason. Here is a quick (and NOT inclusive) list of what I consider to be very important background knowledge that I think is required in order to be successful in my classes. I've included most of the classes that I teach since this will be handed out to all of them. Also, if you are in one of the lower level classes then you can see how the class you're in is important for later classes.

- **Calc I** – Good Algebra and Trig skill are a must in my Calc I class. If you do not have these skills you will find that it will be very difficult to survive my Calc I class. I don't take much pity on people who can't start/finish a problem because of a lack of Algebra and/or Trig skills.
- **Calc II** – You must have a good grasp of derivatives and integrals from your Calc I class. My Calc II class just picks up where Calc I left off and I don't have a lot of time to go back and remind you how to do all this stuff again. As a general rule of thumb, those with C's in Calc I often struggle in Calc II (and that's not just my class either by the way). Again, I don't have much pity for those that can't do the work because of a lack of good Calc I skills.
- **Calc III** – It is imperative that you have a good grasp of derivatives and integrals for this class. You also need a basic understanding of vectors and the vector operations taught in Calc II.
- **DE** – Must be able to deal with basic derivatives and integrals. Generally integration by parts is the main integration technique from Calc II used, outside of that most of it is Calc I derivatives and integrals. Most early problems in DE classes center around bad Calc skills.

**Attend Class** – Often people have the idea that class is not that important and can be skipped without consequence. Here is a list of reasons why it is important to attend class. This is especially important in my class since I allow you to download my "notes" since this seems to give some students the idea that they don't need to attend my class.

- Often important information such as due date changes are only given in class.
- While I do make my notes available for download it is not unusual for there to be information given in class that is not given in the notes. Sometimes, due to a question in class or other reason, I think of a different (and potentially) better way of presenting an idea in class.
- I'm very picky about proper notation. This is something that I did not put into my notes. You will only understand the kind of proper notation that I expect on homework by attending class.
- I generally run with the idea that if you use a proper technique that has been taught in the class (and often from a prerequisite) I'm fine with that. However, there are times in which I will insist upon a particular method and you will only get this from attending class.

**Homework** – Homework is one of those things that far too many students wish that they didn't have to do. Please understand that I don't give the homework just to make your life miserable. Most people need practice to learn the concepts that we're trying to teach you in a math class. Homework is the way to get that practice and the reality is that far too many students won't do the homework unless I force the issue by collecting and grading it. Don't forget that for each homework set you do I had to write the problems for that set, write the solutions to the problems and grade the homework (yes, I do my own grading) so I understand the hassle involved in the homework. I probably spend just as much time wishing that I didn't have to do the homework as you do. I will however continue to do the homework because it DOES help students to learn the material.

Here is a list of general thoughts about homework, why it's important, how to ease the pain a little, hints on being successful with the homework, and some general tips on some things that I will ALWAYS take points off for. Some of these ideas pertain to homework in general and some pertain mostly to my class and they are in no particular order.

- **DO THE HOMEWORK!!!** Yes, I've already talked about this in the intro, but it needs to get mentioned again. Doing the homework is pretty much the only way most people learn how to do Calculus and Differential Equations. On top of that, in my class, the homework is generally worth about the same as an exam grade and is part of your grade. Not doing the homework is almost the same as taking a zero on an exam. Homework should never hurt your grade, however, I have had students not pass my class solely because they didn't do the homework.
- I can't work every type of problem in class and so I will often relegate those that I couldn't work in class to the homework and these types of problems are fair game for the exams.
- Read the problem and make sure that you answer the question that I've asked. I will often ask for multiple pieces of information and/or for an interpretive answer. Many instructors just ask you to take a derivative or integral, or to just solve a differential equation. I try to write problems as often as I can that ask you to actually work with the derivative, integral, or solution and/or do some interpretation of your answer.
- Follow the instructions. I tend to grade very harshly on those that don't follow the instructions.
- My homework sets can be a little on the long side. If you wait until the day before it's due to start (and hopefully complete) the homework you are going to be in trouble. You should do a little homework each day. If you do a couple of problems each day you will find that doing the homework isn't as bad as it seems if you wait until the day before its due.

- I will be the first to admit that many of my homework problems are more difficult than “standard” textbook problems. Over the years most textbooks have “dumbed down” their homework problems to make it “easier” for students to do them. I won’t insult your intelligence in that way. You are capable of doing these problems, even if you’ve been conditioned throughout the years into thinking that you can’t.
- Make your answer clear. I can’t read your mind. If I can’t make out what your answer is I tend to assume that you didn’t know what you were doing and grade accordingly. For example, in some homework problems the answer is “no” or “nothing” and unfortunately students will often not write anything down these cases. However, as I already mentioned, I can’t read your mind so I won’t know if you know the answer was nothing and so didn’t write anything down or if you didn’t know what you were doing. In these cases I always assume you didn’t know what you were doing.
- Persevere. Do not just give up if you can’t get a homework problem. Try again with a different method or after putting it up for a while. Sometimes walking away for 15 minutes or so can freshen up your mind and you’ll see an alternate approach or mistake that was causing things to not work out.
- If you’re having a lot of trouble with the homework then get a tutor. The math department has a free tutoring room in Lucas 209 and there is a list of pay tutors available in the math department office (Lucas 200).
- Find a study group. Study groups can be a great help in working homework. Sometimes somebody will see something that you didn’t.
- Many of my homework problems are too long and/or hard to put onto one of my exams. This item is probably one of the most important items in this whole handout if you think about it a little.
- When doing the homework refer to the class notes and my full set of notes before deciding you can’t do the problem. There is often something in there that will help you at least get started on the problem. Look for similar problem that you can use as a guide on how to do the problem. Remember that I DON’T work all the examples in my notes in the class. I don’t have that much time.
- As a counter point to the above item, don’t get too reliant upon the notes to help you out. You won’t have them for the exam. Referring to the notes is not a bad thing, but at least attempt the problem first before you go to the notes.
- In my class I don’t worry about answers that are not “nice” answers. Not all the answers will be integers or “simple” fractions. I’ve had fractional answers in which both numerator and denominator were 6+ digits and I’ve had  $e^{800}$  as an answer so don’t get excited about it if you do get a “weird” answer. They are only “weird” because you’ve been conditioned from prior math classes to expect only integers or at worst fractions involving no more than 2 digit numerators/denominators as answers.
- Be careful with “baby algebra”. I’m not trying to insult anyone with this topic, but everything discussed below I’ve seen in every class that I’ve taught, including Differential Equations. There are two types of “baby algebra” that you need to watch out for because I WILL take points off for doing this stuff in my classes. All of this material may have been acceptable in high school (although it shouldn’t be acceptable there either) but you are far enough along in your mathematical careers to not be doing “baby algebra” anymore.
  - Make sure you do basic simplifications. These will only help with further steps in the problems. Of course, there is also the fact that I will take points off every time you don’t. Here are some examples, and yes I’ve taken points off for people not doing this kind of simplification on homework...
 
$$\frac{10}{2} = 5 \qquad \frac{x^2(x+1)}{x} = x(x+1) \qquad x^2(x+1)x = x^3(x+1) \qquad \text{etc.}$$
  - Don’t use silly (yes I said silly) notation. Some of this is okay as an intermediate step to help you remember what is going on, but should NEVER be in the final answer. Some examples of this are,
 
$$1 \cdot x = x \qquad x^1 = x \qquad x^0 = 1 \qquad +(-3) = -3$$

In all of these, the left part should NOT be in your final answer. Only the right portion is acceptable for final answers.
- I am more than willing to help you with your homework and in fact generally spend several hours each day doing just that with students. However, the first thing that I will generally ask is to see what you’ve done on the problem to that point. So, make sure you attempt the problem prior to coming into to me for help and make sure to bring all work you’ve done on the problem. If you really just didn’t know how to start the problem that is okay, but not on a continual basis. In other words, don’t expect to just come into my office and have me essentially work your homework set for you. I’m more than willing to help you provided you’ve put some effort into it yourself.

**Studying** – Here are a couple of general studying tips for a math class.

- Study often. A math class is not like a history class where you can just sit down the night before an exam and memorize a few things and be okay for the exam. You not only need to memorize formulas for a math class but you need to be able to understand how to work with and/or apply them. You should be setting aside time each day to work on your math classes whether it be doing homework or reviewing notes or old homework. This is the only way to really be successful at a math class.
- Redo old homework sets without looking at the solutions. Most people need to actually work problems to learn the techniques. This is the best way to do that.

**Exams** – Here are a couple of quick tips to taking exams that may be of help to you.

- Go through the exam three times. The first time you only answer questions you know you can do. The second time through you attempt problems you think you may be able to do. Finally, go through and work on the problems you're not sure how to do. Doing this will get you the most points possible.
- Pace yourself. If you find yourself spending too much time on a problem skip it and come back to it only after you have all the problems done you know you can do. I've seen students spend 20 minutes trying to get 10 points on a problem only to run out of time and not get to 20 points of problems because of it.
- Make sure you at least attempt the problems. While I won't guarantee any points on your work, I can only give partial credit if there is something written down. I do attempt to give as much partial credit as I can, but I can only do that if you give me something to work with.
- Read and follow the instructions. I'm very harsh on those that don't follow the instructions.

**Attitude** – This is last because students often misinterpret this as an attempt on my part to put all the blame on poor performance in the class on them. That is not what this is. There are simply some attitudes that some students have that can affect their performance in the class. Some of these are specific to my class and some are more general and are in no particular order.

- Most people are in this class not because they want to, but because their department said they had to be in the class. I understand that. However, just being angry about being “forced” to take a class that you don't understand the purpose of and not putting any effort into the class will not help the situation. In most (and unfortunately I can't say all) cases your department has a real and valid reason for wanting you in this class. Often it is because some of this stuff will arise in later classes. For instance it is surprising just how much Calc III and Differential Equations shows up in upper level Chemistry courses and as a new Chemistry major you may not understand that until you reach those classes, but it is there. Another reason many departments want you in these classes is from a maturity/ability stand point. They figure that if you have what it takes to get through, say Calculus I, then you have the ability and maturity to handle what they are going to throw at you. You often see this in Med Schools. While I don't know much about Med School I do know that many require Calc I and some like for you to have had Calc II. In other words, you may not want to be here and you may not understand why you're being asked to take this course, but you are here so you may as well get used to that. The requirement that you take this course is not going to magically go away because you don't want to be here so make the best of the situation, do the work, and just get through the course.
- Please understand that I'm not “out to get you”. I know that sometimes that may seem like it, but it isn't the case. My job is to teach you mathematics and I'm going to do that to the best of my ability. Unfortunately, part of that is making sure that you learned the material through homework assignments and exams. It also, means that I sometimes have to fail students. I don't like to and wish that I didn't have to, but unfortunately, I do have to do that. Again, it's not personal, I'm simply doing my job.
- Be positive. If you walk into this class convinced that you aren't going to do well, then the chances are quite good that you won't do well.
- Don't play the competition game. It doesn't matter where to you stand in relation to the other students in my class. Your grade is based upon the scale announced the first day of classes and not in relation to the other students. Too many students spend far too much time worrying about what the other students are doing instead of spending that time studying. Also, some people get this stuff quicker than others. Just because somebody else is having difficulty picking up something doesn't mean you will also have problems picking it up. Likewise, don't get frustrated that you haven't picked up something that others have. It may just mean that you need a little more work to pick it up.
- Do not just assume that you'll pass my class. You should always know where you stand in the class. I have a very simple grading scheme. I add all the points you got (homework, exams and final) and divide by total possible points, I then compare this percentage to the standard grading scale listed on the course information sheet. That's it. You can, and should, compute your grade after every exam so you know where you stand in the class. Too many students seem to just assume that they are doing okay in the class and then are surprised at the end of the semester to find out that they weren't doing as well as they had thought they were. Computing your grade after each exam will always let you know where you stand in the class.
- Do not obsess about your grade. This is somewhat contradictory to the previous point, but is important. You should know where you stand, but don't expend huge amounts of time computing the number of points that you need for the rest of the semester to get an X (grade of your choice) in the class. I've had students literally spend hours before each exam computing what they need to make on the exam it to achieve the grade they want and not spend that time studying for the exam. There is nothing wrong with computing the number of points required, but don't continually redo it. Do it once so you know and then start studying so you can actually make that grade!
- Don't expect a scale on the final grades. **I DON'T SCALE!!** In my class the worse thing you can do is hope that I'll scale at the end of the semester. **I DON'T SCALE.** I can't make it any clearer than that. I set grades based upon the standard grading scale and that's that.