

# Aerostudents LaTeX Guide

## Why a Study Guide?

There are a lot of summaries on this website. But you usually can't pass any course by just reading some summary. Also, most (especially first-year) students have trouble preparing their selves for examinations. This study guide explains a way to prepare yourself for examinations and how the summaries on this website can play a role in that. It also contains a lot of tips on how to make examinations. It would be wise to read it sometimes, to see if you find it helpful. Because those ten minutes you spend reading might just change your life.

## The Best Way to Learn

A lot of people know the phrase "the best way to remember something, is by explaining it to others". My experience has told me that this is true. And the reason for that is that explaining something forces you to think about a lot of things. It makes you wonder even about parts you otherwise would just mark as unimportant and forget about.

So you need to explain data. But there isn't always some one to listen to your explanations. That's not a problem at all. There are more ways to explain something. One method I personally use very often, is writing summaries. In a summary you should put all the data you need to know, written in such a way that the summary explains everything as short as possible, but nevertheless in a clear way.

But why does this help? Well, that's easy to understand. When you're making a summary, you force yourself to ask yourself a couple of very important questions:

- What data should I put in my summary? - You make a selection of data. By deciding what is useful and what is not, you reduce the amount of study material drastically. Only focusing on the important things saves a lot of time.
- What does the data that I put in my summary mean? - You want to write down the data. But before you can write it down, you need to understand it (otherwise you don't know what to write). While reading a book it's easy to skip parts you don't understand, but while making a complete summary you can't skip parts. You immediately know what you understand, and what you need to spend time on.

And making a summary also has various other benefits. Just before an exam, you should read your summary. By doing this, you review all the stuff you need to know in just a matter of minutes! And that isn't the only benefit. While making your summary, certain links have formed in your mind between the things you put in your summary, and the things you were actually reading. By once more reading the summary, you reactivate those links. It's just like you just read the entire book a few minutes before your exam. Your memory is still fresh!

So, making a summary helps a lot while studying. And if you've forgotten everything you've learned after a few years, it's always easy to look things up, since you still have your summaries.

## Building your Summaries

A summary usually isn't made in a single day. But then again, you don't have just a single day to prepare for an examination. You've got 8 weeks or so. However, most students have the habit to just attend a few lectures (and nothing more) during the 7 lecture weeks, and try to catch up in the white week. My personal experience is that this method prepares you insufficiently for your exams and, even worse, you just forget about everything after the exams!

But what should you do then? The best thing you could do is to work just a little bit harder during the lecture weeks. At the end of every week (during Friday afternoon or in the weekend) make a summary of everything that you've learned (or should have learned) in the past week (or weeks, in case you're behind schedule). In that way you gradually build up a collection of summaries, which save you an incredible lot of time later.

And when all the lectures are finished, it's time to go through your collection of week-summaries once more (for every course), and try to make a whole summary out of them. Delete double parts, add missing parts, order it in chapters and make a good story out of it.

But how do you know your summaries are complete (whether nothing important is missing) and whether they're not too long? That's where the summaries on this website come in handy. Compare your own summaries with the summaries on this website. Is something on this website that isn't in your summary? Is it important? If so, add it! If not, please notify us, so we can improve our summaries. Is something in your summary that's not on this website. Is it important? If so, please send us your summary, so we can update ours. If not, delete it from your own summary.

If you follow all these steps, you should have a set of complete summaries already at the start of the white week. So you can take a vacation for the rest of the white week, and be well rested for your exams.

## Preparing for an Exam

Now the exam is coming up. You already got your summary. What is the next step in the process or preparation? That question has a simple answer: Practice. Never enter an exam without practice.

If you've attended lectures and written a summary, you've already gotten some practice. But exam questions usually differ from theory. That's why you need to spend the last day or two before your exam practicing exam questions. Make sure you get a few old exams and take your time making them. When you're done with them, see if you can find

answers so you can check your work. For everything you did wrong, you need to know exactly what you did wrong and why. Because it's your mistakes you learn most from.

You can prepare well for an exam on your own. But you can prepare even better for an exam with others. Discuss any doubts you have on any old exam question with friends. And if your friends aren't available, there are always other places where you can discuss things. The forum is a good place for discussions. And sometimes this website also organises study-days in which a group of people get together to prepare for an exam. If you're interested in something like that, let us know!

When you've got the feeling you can make exam questions on your own, without help from the answer sheet or from other people, you're ready for the exam.

## The Last Hours Before an Exam

No matter how good your preparation may be, there are still things that can go drastically wrong the final hours before an exam. What things can go wrong, and how you can prevent them from going wrong is something you ought to know.

Something that's very important for an exam, is to be well-rested. Make sure you get enough sleep the day before an exam. A tired mind functions a lot less than a well-rested one. Science has also proven that tired minds are more prone to stress and more easily freak out than minds which are fully awake. And freaking out is something you definitely do not want during an exam.

Next to having sufficient sleep, there are a lot more things to consider. This is a checklist which might come in handy.

- Make sure you know when and especially where your exam is. There have been people who left their house and after heading to the university grounds they found out they didn't know in what building they had their exam.
- Pack your bag in time, preferably the night before the exam. Don't forget to bring a pen, a calculator, and most importantly, your campus card. Lost your campus card? Then bring a valid ID, and you might be lucky and still be allowed to do the exam.
- Make sure you have trustworthy transportation. If your bike is on the verge of breaking down, arrange a backup transport, just in case. If your train often has delays, make sure you're half an hour early.
- Also try to be at the examination hall at least a quarter of an hour before the exam starts (preferably about half an hour). Even if something goes wrong, you can still be in time.

If everything goes right, you arrive at the examination hall well before the examination starts. It's the ideal time to read through your summary one last time. It refreshes your memory and increases your self-confidence. And a self-confident attitude can help so much during an exam.

And then before you start your exam, there is one thing you shouldn't forget. Go to the toilet. Going to the toilet prior to the exam saves time during the exam. And if you even remember this, what can go wrong?

## Writing the exam

So, you've had the perfect preparation, you're sitting in the examination room, and you may start on your exam. What do you do? A logical answer would be: Start on the first questions. But that's not always the best thing to do.

When you open your exam, just take a little bit of time to browse through it and get a general impression of it. What questions will be difficult? On what questions can you score easy points? And now comes something important. Just start with the easy questions! You're allowed to make the questions on the exam in any order you like, as long as you clearly indicate what question you're working on. So if you just start with the easy questions, you're already off to a good start. Better make all the easy questions and forget about the difficult ones, than struggle with the difficult ones and ignore the easy ones. (That would be a waste!)

So you spend some time making questions. If you don't see the answer right away, try to solve it on a piece of scrap paper. If you still haven't got an idea after 10 minutes, move on to the next question! Don't spend 2 hours working on the same question! However, if you do find the solution, you still need to write it down. And that is an art by itself. It therefore has its own chapter in this study guide (see next chapter).

But after a while you think you're finished. What do you do? Get out of the hall as soon as possible? I wouldn't advise it. Let me advise you, no, let me order you, to spend some time on checking your work. Even if time is lacking, just stop what you're doing and take the last five minutes of your exam to check the things you've written down. Have you put units behind every answer? Have you actually answered the question? (It seems funny, but people often forget this!) My own experience is that just checking your work can raise your grade by 0.5 point, if not more! And that in just five minutes!

Now everything is finished. You made the exam. You checked your work. Before leaving the hall, there is one last thing to check. Whether you actually put your name on every paper. After that, hand in your exam, go home and relax! Prohibit yourself from even thinking about the exam any longer. No, it doesn't get your grade up, but it does make you feel better.

## Writing Down a Solution

So you've chosen a question you're going to make. You already got a pretty good idea on how to solve it. Now you need to write down the solution. My experience taught me that that's something that often goes wrong. Especially in courses with a lot of calculations, students lose points not because they don't understand the question, but because they don't write it down well enough! That's why it's so important to ask yourself how you're going to present your solution.

Presenting a solution in non-calculation courses usually goes well with students, so I'm not going to pay attention to that. It's the calculation subjects that are usually quite worrying. You shouldn't just write down a row of equations that (might) lead to the answer. Because if you make one minor error, the person correcting your exam hasn't got a clue what you've been doing, and will put a big cross through it (that really happens). You also need to explain what you're doing. A few things to pay attention to are:

- Define your variables - A first thing that's important when writing down equations, is to define the variables in it. You may write something like  $a = N / m$ , but if you haven't said what  $N$  is, the formula is useless!
- Say where your equations come from - Equations don't come from nowhere. Sometimes some general equation implies it (for example: "Taking the sum of the forces on the disk in x-direction gives:"). Sometimes you derive it from earlier equations (For example: "Combining the previous equation with the one before it, gives:"). You might even number your equations if necessary. But not writing how you got your equation can be counted as an error.
- Say what your equation calculates - Sometimes it seems obvious what your equation calculates. But still it's a lot clearer to just write down something like "The distance traveled  $s$  can be calculated using:". This makes it clear what you want to do, and even if you make an error, the person correcting your exam understands what you're doing and can still give you some points.

So instead of writing down simply  $d = t * V * \cos a$ , it would be better to write down "If  $V$  is the initial velocity and  $t$  is the time the bullet is in the air, then the distance  $d$  until it hits the ground is:  $d = t * V * \cos a$ ". (If " $a$ " hasn't been defined in the question, you still need to define it.) This makes it a lot easier to read! And by doing this consistently, you will get more points on your exam! Just make sure you don't spend too much time on writing everything down in a clear way.

So, writing down solutions is an art itself. And it should be, because you're not handing in just a solution. You're handing in a piece of art, which guides the reader step by step through the solution process. And if you're doubting about the clearness of your solution, just clear your mind, imagine you're a reader who doesn't know what's going on in your mind, and read your own solution. Is it understandable? If not, what is unclear? Then that's what you need to change! And if you do that, nothing can stop you from getting the question right!