

Physical Natural Sciences

Written by:

Mudassir Hussain (mmh62@cam.ac.uk)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Example Timetable

The timetable in first year will likely be two lectures a day, six days a week (three lectures per subject per week). Alongside the lectures, there is a variable amount of practical work depending on the subject combination you chose (four subjects in total-three scientific subjects and either math A or math B).

Physics: One practical every Two weeks (14:00-17:45)

Material science: One practical every week (2/3 hours)

Earth Sciences: Three practicals every week (2 hours), most of these are non examined

Chemistry: One practical every Two weeks (11:00-17:00)

Practical sessions usually make up 20-25% of your IA grade for each scientific subject. In addition to the practical sessions, there will be four supervisions per week (one per subject per week).

Timetables will increasingly vary in part IB and part II depending on the route you take. Generally, there will be fewer supervisions and more practical work. In part IB, most students choose to go down one of two routes to specialise into physics/chemistry:

-Physics A, Physics B and Math

-Chemistry A, Chemistry B and Math

There are earth sciences and materials science options that students can choose to take.

In part II, there is increased optionality in your subjects and modules. For example, in part II physics you can choose to completely eliminate practical sessions by choosing the theoretical physics exams.

What are labs like?

The labs are intense because you have to fit them into your busy schedule alongside lectures and supervisions but they are usually done in pairs/groups which makes them more enjoyable. The labs get a lot of mixed feedback and students are able to tailor their degree in the later years (especially part II and part III) in order to increase/decrease the amount of time spent in the lab.

What is unique about the Cambridge course?

Getting to study a range of different scientific subjects gives you a solid basis across the physical sciences. This means that in later years of your studies, you can make links across disciplines and become a more well rounded scientist. The supervision system is also something unique to the Cambridge/Oxford courses. Having the time to sit down in a pair/three and go through the problem sheets with an expert is something that is invaluable in your development as a student but also as a scientist.

What did you wish you knew when applying?

I wish I knew how intense the course was and how much effort it really takes in order to do well. The course requires a huge amount of time and dedication and it is easy to get overwhelmed, especially in the first year or so. I wish I knew that the key to doing well was asking other students what they did and working alongside them to solve problems and get through the course.

Favourite and worst thing about your subject?

My favourite thing about the course has to be the fact that you get the opportunity to ask leading experts in their fields about any questions you have. I remember in third year, whilst doing an astrophysics course, I used to ask (mid lecture) lots of questions and got an answer straight away. The open communication between lecturers/supervisors and students really fosters curiosity and makes for a very open learning environment.

The worst thing about the course for me has to be longer labs in later years. In second year, physics labs run from 10:00-17:45 and are very time pressured making it difficult to learn the physics. The general fast paced nature of the course is not very conducive to allowing you to appreciate and understand the science you are learning along the way because as soon as you learn one thing, it is onto the next.

Application Timeline

In the Summer, I would recommend preparing as much as possible for the admissions test (ESAT) and making sure you know the content you need from your A-level courses really well.

In September and October, ramp up the ESAT preparation and start thinking about the interview.

Personal Statement Tips

When it comes to the personal statement, the goal should be to demonstrate that you have gone out of your way to develop your understanding in the subject you are applying for. This can be through summer schools, online

courses and extra reading. Including specific examples of scientific ideas you find interesting can also be helpful. Note that you don't have to write a 'natural sciences' personal statement, it can be for a specific subject (mine was for physics) so if you know which route you want to go down in your course, the personal statement can be used to reflect that.

I would recommend a 80% academic and 20% extracurricular split for the personal statement.

Entrance Test Tips

The **Engineering and Science Admissions Test (ESAT)** is the new entrance test that is being introduced. The details of this can be found online. The key things to note are that this will take place either on the 15th or 16th October. This is a computer based assessment. Free practice materials will be made available in May 2024.

Interview Tips

The interview is one of the most important parts of the Cambridge application process and it is important to prepare accordingly. Make sure to do as many practice problems as possible. The interview is essentially another exam where the interviewers will ask you challenging questions and you will work through the questions with them. It is important to think out loud and walk the interviewer through your working/thought process. Also, make sure to ask your interviewer questions if you need help, this will not only help in the question you are solving but also show your willingness to ask for help when you need it.

In preparation for the interview, ask teachers, friends and anyone available to give you mock interviews. You can also solve challenging problems out-loud, explaining every step of your thinking.

Recommended reading/activities

Summer schools/programmes are a great way to demonstrate your interest in the subject. Churchill College holds free physics bootcamps via 'ISAAC Physics' which are great to get a taste of Cambridge and the course in general. I would also recommend doing any maths/physics challenges such as the UKMT/Physics/Chemistry Olympiad as it will show you have gone beyond the A-level course to develop your interest in the subject.

In terms of reading, I would say read what you find to be genuinely interesting. I read a book called 'Quantum' by Manjit Kumar which I talked about in my personal statement because I found it genuinely exciting. There is no reading list/books that I would recommend, just read around your subject and find something exciting!

