

# Frequently Asked Questions about Oxford Physics (February 2008)

This document is derived from our online list of Frequently Asked Questions. Please note that the online version is usually more up to date, and is significantly more useful as it contains links to many other resources. While this printable version is a handy summary it is no substitute for the real thing, which is available at <http://www.physics.ox.ac.uk/admissions/faq.htm>

## Which College should I apply to?

The choice of college is probably seen as a much more important problem outside Oxford than it is inside. One view is given in *The Oxford Handbook* written by the Oxford University Students Union. The University Undergraduate Prospectus also has some advice on choosing a college in its introduction to colleges section.

The important thing is to get here. If you are undecided which college to choose, make an “open application” and let the Admissions Office computer choose for you. After all, the physics lectures, practicals and projects take place in the Department of Physics, and are the same for all students, regardless of college.

The admissions process is explicitly designed to ensure that the choice of college has as little effect as possible on the chance of being accepted. One aspect of this is that candidates are occasionally reallocated from the college they initially chose (or were assigned to) to a different college. Another consequence is that candidates may receive offers from a college different from the one handling their application, or an Open Offer with no college specified.

## What is the reallocation process?

A key aim of the admissions procedure for Oxford Physics is that an applicant’s chance of obtaining a place should as far as possible be independent of the college handling the application, whether the candidate applied to a particular college or made an open application. To assist with this, candidates may be *reallocated* from the college initially handling their application to another college where the ratio of applicants to places is lower, so as to ensure that this ratio is as constant as possible across the university.

Reallocation occurs after results from the entrance tests are known and the short list of candidates for interview has been drawn up. You may, therefore, be invited to interview at a different college from that which initially handled your application. All your application materials will automatically be transferred to the new college, and there is no need to send anything further unless the new college specifically requests you to do so.

Candidates for reallocation are selected at random, and are treated in exactly the same way at interview as other candidates.

## What is the admissions test?

Oxford Physics has used an admissions test in mathematics for many years. Originally this test was sat during the admissions period. In 2006 this test was replaced by two new admissions tests, one in physics and one in mathematics, each lasting 1 hour, which were sat before the interview period, during late October or early November, and used to draw up a short list of candidates who were invited to interview. From 2008 these two tests will be combined into a single 2 hour paper.

A specimen paper is available, as is an outline syllabus. The syllabus is specifically designed so that most UK candidates should be able to sit these tests without special preparation.

### **Where will the test be taken?**

The test must be taken in an appropriate centre, normally the applicant's school.

### **When will the test be taken?**

The 2007 tests were scheduled for Wednesday 31st October together with the 2007 BMAT and other Oxford Aptitude Tests. The 2008 tests are tentatively scheduled for Wednesday 5th November. Test papers will be posted to centres about one week before this date. If papers have not been received by the day before the tests then copies can be sent electronically or by FAX.

### **What forms do I have to fill in?**

In addition to the normal UCAS and Oxford Application Forms, individual applicants should also fill in a Test Centre Declaration Form, and arrange for this to be returned to the Oxford Colleges Admissions Office. Copies of this form are included in the Oxford Application Form Pack which is available at the University web site. *Candidates applying through UK schools registered with UCAS do not need to complete this form, but should ensure that their schools are aware of the tests.*

### **Is there a fee for the test?**

There is no special fee charged for the Physics test, but all applicants are required to pay the normal fees to UCAS and the Oxford Colleges Admissions Office.

### **What is the syllabus for the test?**

The syllabus is available on the Oxford Physics web site. Candidates who have studied physics and mathematics at GCSE and AS level should already be familiar with the great majority of the syllabus.

### **Will I need calculators and formula sheets?**

No calculators or formula sheets may be used when taking the test. You will only need pen and paper but may also use a pencil for sketching if you wish.

### **Are sample papers available?**

A sample paper is available on the web at the Physics web site. Past papers will be posted on the Physics web page as they become available. Sample and past papers dated before May 2006 were set using a different syllabus and are no longer relevant. Past papers and sample papers dated from May 2006 but before May 2008 involve two separate papers as described above, and the use of calculators was permitted in the physics test but not the maths test. These papers can, therefore, provide general guidance on the likely content of future papers, but retain the old format and can include quite complicated numerical computations on the physics papers. Please note that we do not provide sample answers or a mark scheme for these papers.

### **What is the pass mark for the tests?**

There is no pass mark as such for the test, but there is a threshold mark, below which it is unlikely that candidates will be placed on the interview short-list. This mark will not be determined until the results of the tests are available, but past experience suggests that a threshold mark in the range of 45% to 50% is likely.

## **How should I prepare for the admissions process?**

The admissions process for Oxford Physics is designed so that most UK candidates will not need to undertake any special preparation. You should, however, ensure that you are completely familiar with all the physics and mathematics you have learnt at school. During the admissions process you will be expected to demonstrate not only that you are familiar with all the material you have been taught, but also that you are able to use this material in an unfamiliar context. In particular a key skill required in the Oxford Physics course is the ability to apply mathematical ideas in a physical context.

Admissions interviews for Oxford Physics are purely academic in nature, and you are likely to spend the great majority of your time talking about physics or mathematics, rather than about any wider interests you may have mentioned on your application form. Interviewers may, however, choose to ask you about specific topics you have mentioned on your form, and it is wise to ensure that you are familiar with any topics you have mentioned.

Detailed advice about preparation for interviews can be found in the leaflet Interviews at Oxford; printed copies are available from the Oxford Colleges Admissions Office and it is also available on the University web site.

## **Do I need one or two maths A-levels?**

We welcome candidates with either “single” or “double” maths A-levels. But it’s very important to appreciate that the Oxford Physics course does contain lots of maths. This means that A-level Maths (or its equivalent) is essential for entry. Further Maths, at either AS or A2-level, is desirable, but it is not a requirement. What matters is that you should be good at maths, and enjoy the prospect of applying it to physical problems and working out the answers. This is equally true for the joint course in Physics and Philosophy, which contains at least as much maths as the Physics course.

Our “standard” maths courses in the first term do not assume knowledge of Further Maths material, but they cover the relevant bits very quickly before getting on to the new stuff. Even those who have done A2 Further Maths will find that they are learning new maths after only a few weeks at Oxford.

## **What is the standard A-level offer?**

Our standard A-level offer is AAA, including grade A in physics and grade A in maths and excluding general studies and critical thinking. Individual offers will be based on this but may vary in details; in particular the subject of the third A grade is often specified.

## **I don’t have A-levels, so can I still apply?**

We welcome applications from candidates with a wide range of qualifications, including Scottish and Irish Highers, the International Baccalaureate, and many national qualifications. You will still need qualifications broadly equivalent to three full A-levels. Our standard offer for the IB is 38 points (including core points) with 7 at higher level physics and higher level maths. Offers for candidates studying under other examination systems are set at a level broadly comparable to the IB offer. Further details about typical grade requirements may be obtained from the Oxford Colleges Admissions Office or the University web site.

## **What about Mature Students?**

We welcome applications from Mature Students. Further details can be found on the University web site.

## How do I apply to do a second BA?

Applicants for a second undergraduate degree are treated in exactly the same way as those for a first undergraduate degree except that they are required to submit certain additional materials. Further details can be found on the University web site. All second BA applicants are required to take the admissions tests.

Please note that some colleges do not accept applications for second BA students in Physics; further details can be found in the information pack on the University web site. Successful applicants may be granted Senior Status, that is exemption from the first year course and examinations, but decisions on this are made by individual colleges and may require additional information to be provided.

## Can I take a year out?

Opinions vary on this issue, and depend on your plans. Sponsorship schemes offering a year's work experience in a physics-related field may be excellent, but some activities are less useful. An athlete who does not train for a year will be pretty rusty. Likewise a physics (or maths) student who does not use his or her brain for a year will also be pretty rusty and this is the danger of a gap year.

The Institute of Physics publishes a booklet called *Sponsorship and Work Placements for Physics Students* which can be requested by email from [education@iop.org](mailto:education@iop.org) or by post from Education Department, The Institute of Physics, 76 Portland Place, London W1B 1NT telephone 020 7470 4800. The Year in Industry programme, which has contacts with over 300 companies, may also be able to assist with suitable activities for a gap year.

Some of the activities we hear suggested for the gap year could be done during the long vacation between the first and second years. Or you may like to consider taking a gap year after your degree.

## Can I apply for both Physics and Philosophy and Physics?

From 2007 candidates who apply for Physics and Philosophy may also name Physics as a second choice. Such candidates will be considered for both courses at the same time. If a candidate is considered suitable for both courses, then only an offer for Physics and Philosophy will be made. See the prospectus for more details.

## What about Materials Science and Geology/Earth Sciences?

Candidates who name Physics as their first choice subject may name either Geology/Earth Sciences or Materials Science as a second choice. See the prospectus for more details.

## What is an Open Offer?

Every year a small number of candidates for Oxford Physics receive an Open Offer, sometimes called a Pool Place Offer. This is an offer of a place to study physics at the university, but without a college being specified. Recipients of open offers are *guaranteed* a place at some college, but which college this is will not be determined until after the A-level results are published in mid August. Each year a small number of candidates fail to meet the conditions of their offer, or withdraw for other reasons, and the vacancies arising from this are filled by candidates holding Open Offers.

Every Open Offer is underwritten by a particular college, and in the unlikely event of a vacancy not arising a place will be made available at the underwriting college.

Open Offers are not made for places in Physics and Philosophy. However, candidates applying for Physics and Philosophy may receive an Open Offer for a place in Physics.

## What are the fees for a physics degree?

Information on fees and other expenses can be found on the University of Oxford Undergraduate Admissions web site. There is a section on Student Finance with information on Funding for Overseas Students and Classification of students for fees purposes.

## What are the English language requirements?

Candidates must have a high level of competence and fluency in English. Formal requirements can be found on the University web site.

## Are there any grants or bursaries?

Oxford University offers a wide range of grants and bursaries, details of which can be found at the University of Oxford Undergraduate Admissions web site. In addition to this the Department of Physics offers additional IoP Physics Bursaries funded by the Institute of Physics. These bursaries are not intended as a substitute for other forms of financial support, and will be provided in addition to any other support which is offered. Our bursary criteria are designed to encourage students who do not traditionally choose to study Physics at university, and do not include explicit financial or academic criteria. Application forms for bursaries are sent to successful applicants after their place has been confirmed in August. In 2006 we will offer 14 bursaries, each of around £1000.

## Oxford Physics or Cambridge Natural Sciences?

If you are accepted for an Oxford Physics course, you will study physics right from the word go. We offer two undergraduate physics degree courses: a 3-year BA Honours and a 4-year MPhys. The basic principles of modern physics, their mathematical formulation and their applications are investigated in both courses. The first year (foundation) and second year (core physics) courses are the same for both the BA and the MPhys. In the third year, the core physics is applied to a number of new subjects, all of which are studied by MPhys students. BA students choose some of the third year subjects, and do a project. In each of years one, two and three, students on both courses choose additional subjects from a range of options. In the fourth year of the MPhys course, students study two or more areas of physics at an advanced level, and do a substantial project.

If you do want the flexibility to choose non-physics subjects and perhaps to delay the decision about which is your main subject then Oxford Physics is not for you. The Natural Sciences course at Cambridge is perhaps more suitable.

## If Oxford's terms are only 8 weeks long, do students only work a 24 week year?

The short answer is no! It is very important to understand the role of “vacations” in the University year. At Oxford the teaching terms are shorter than at many other universities, adding up to only about 25 weeks in one year. Vacations have to include holiday time, and everyone recognises that for many students they also have to include money-earning time. Nevertheless, it is absolutely essential that students set aside significant amounts of time during each vacation for academic work. The course assumes that this will be done. Students must go over their lecture notes, revising the material and supplementing it by information gained from tutorials and from their own reading. And in addition to consolidating the previous term’s work, the student should try to prepare for the next term’s courses.

Tutors will set work to be done in the vacation, and to ensure it is done, they often set a test called a *collection* at the start of the next term. Collection results are for the benefit of student and tutor only, and are not fed into any University degree classification. Good collection results may be rewarded with a prize, typically £20-£50 to spend on books.

Some students perform vacation projects during their second year and this can contribute to their practical work requirement for Finals.

## **What is the typical weekly workload?**

Prelims (1st year): 10 hours lectures; 6 hours in the lab, followed by 3 hours writing up which will drop to, perhaps, 1 hour by the end of the year; 1 physics tutorial; 1 maths tutorial. (Each tutorial will require about 10+ hours work.)

Part A (2nd year): 8 hours lectures; 6 hours in the lab, followed by 1 hour writing up; 2 tutorials - usually physics but maths when required.

Part B and part C workloads vary depending on the options chosen, although the first part of the third year is very similar to the second year. Hilary term of the fourth year (MPhys) is spent doing a project, and also work on two major options.

Most of the workload above is unsupervised so it is up to the student to organize her or his time effectively. Those who have developed this discipline at school will have a considerable advantage. There are many attractions competing for students' time at Oxford. Whilst a broad range of interests outside physics is welcomed and encouraged, some leisure activities may prove incompatible with the physics courses.

## **How much practical work is there?**

Students spend about one day per week in the laboratory plus more time writing up what they have done. The time spent writing up gets shorter as students become more proficient, and really well-organized students may be able to reduce the lab time as well.

In the second and third year, students may choose to exchange some practical work for special options papers in Part A and B of Finals. Satisfactory performance in practical work is a requirement of both Prelims and Finals.

There is a huge range of practical work available - about 150 prescribed investigations in addition to Part C project work and possible vacation placements within research groups and elsewhere. Students who put the most in get the most out.

## **How much computing is there?**

In the first year you are required to complete a short computing course. During this course you will learn first how to use the computer system and the elements of a programming language such as C, and you will then use this knowledge to solve physics based problems.

There are also extended programming practicals in both of the first two terms. You will be required to word-process your final year project report. These two requirements are the only compulsory computing parts of the physics courses. Increasingly, mathematical modelling programs like Maple are being integrated into the taught courses.

We have a network of iMac computers served by an Apple Xserve. The computers run Mac OS X which is a UNIX based operating system. Students find it powerful and easy to use regardless of previous experience (or lack of it). The system is available 24/7 via the University Network.

Students typically use computers to control experiments and gather data, to analyse and plot data, to access libraries etc. to gather information, to do word processing, for e-mail (every student has a University e-mail account), for web browsing and even playing games. Enthusiasts can do practicals

or projects where computers are used to model and investigate physical phenomena such as chaos or ferromagnetism.

Computers are also used for administration. Experiments are booked and records of completed practical work are kept on computer. Notices are distributed electronically and regular checking of e-mail is essential.

## What maths should I know on arrival?

Our “standard” maths courses in the first term do not assume knowledge of Further Maths material, but they cover the relevant bits very quickly before getting on to the new stuff. A detailed list of what we do assume is available on the web. Even those who have done Further Maths will find that they are learning new maths after only a few weeks at Oxford. It’s important to stress, though, that the maths isn’t being studied for its own sake, but because it will be needed in the physics course. This *combination* of maths and physics is a challenge for most students: it’s different from A-level, where knowledge of A-level maths is not required to do A-level physics. In the Oxford course, you’ll meet this mixture of maths and physics right at the beginning, in the first term’s mechanics course.

Almost half your time in the first year will be spent on maths. After that, there is a bit more maths in the core material for the Part A examination, and you can choose more, or less, mathematical options e.g. a theoretical physics option instead of some practicals.

## Can I do astronomy?

You can choose to take a short option in Astrophysics in Prelims or in Part A in the second year. Astrophysics is an integral part of the Part B course, and forms half of one of the Part B exam papers. Astrophysics is also available as a major option in Part C of the 4-year MPhys course.

## How easy is it to change courses or even subjects?

The two physics courses (BA and MPhys) are identical for the first 2 years (6 terms). It is easy to change between them immediately after the Part A exam although funding agencies may view the change to a 4 year degree much less favourably than a change from a 4 to a 3-year degree.

With the exceptions of changing to Earth Sciences or Materials Science at the end of the first year, changing between subjects is possible but not easy. You need to be qualified to take your new course so the change between closely related subjects, e.g. physics and engineering science, is much less difficult than between unrelated subjects, but no changes are easy. It would be something you would discuss with tutors from both courses and it would have to be acceptable to all concerned. There may be added complications with funding agencies if you have to repeat a year.

LEAs permit a change of course (even from a 3 year course to a 4 year course) up until the end of the **4th term after entry** i.e. Michaelmas Term of the second year. Thereafter 4 to 3 is easy but 3 to 4 is probably **not**.

## Do Prelims Exams results count in Finals?

Physicists at Oxford take two sets of exams. The first, called *Prelims*, is taken at the end of the first year (after 3 terms). The second called *Finals* is taken in two or three parts. *Part A* is taken at the end of the summer term of the second year (after another 3 terms). 3-year BA students and 4-year MPhys students take *Part B* at the end of their third year. Students pursuing a 4-year MPhys course also take *Part C* after 3 more terms at the end of their fourth year.

Published Prelims results are not classified although tutors are given quality marks. Students are required to pass Prelims in order to continue their courses. (Colleges may award scholarships or prizes

for good performance in Prelims.) There is an opportunity to retake any failed papers at the end of the summer vacation but a repeat failure is usually final in the sense that you will have to transfer to another university! Prelims results do not contribute in any way towards Finals.

The published Finals Part A and B results are not separately classified although again tutors are given quality marks, and the results of Part A are used to determine eligibility for the 4 year course. Students taking the 3-year BA will receive a classified degree after Part B. For MPhys students, when the Finals Part C examination has been taken, the combined results of Part A, Part B and Part C are published with classifications.

## **How do College, Department and University fit together?**

Briefly, you are offered a place by a college and the college is where you will eat, sleep, play and work under the guidance of your college tutors. Lectures and practicals are provided by the Department. The University arranges the exams and gives you a degree.