

FAQs

1. What is the relationship between departments and colleges?

The department determines the content of the course and provides lectures, practicals, and examinations. The colleges carry out admissions and provide accommodation, the day-to-day living environment for students, and small group subject-specific teaching (called supervision at Cambridge).

<http://www.cam.ac.uk/admissions/undergraduate/colleges/>

2. How do I choose my college? Do only some colleges take physics students?

Students can study Natural Sciences (Physics) at all colleges. The college that you choose will be your home for three or four years; therefore the most important consideration is whether you will find it a comfortable and appropriate environment.

<http://www.cam.ac.uk/admissions/undergraduate/colleges/choosing.html>

3. What subjects and grades will I need to get a place?

Essential: A level/Advanced Highers/Higher Level IB in Physics and Mathematics. Alternatively, Mathematics and Further Mathematics (with at least three units of Mechanics).

Useful: A level/Advanced Highers/Higher Level IB Further Mathematics, Chemistry.

Typical offers are: A*A*A (A level), A1,A1,A2/A1,A1,A1 (Advanced Highers), 40-42 pts with 776/777 (IB Higher Level).

<http://www.cam.ac.uk/admissions/undergraduate/courses/natsci/requirements.html>

4. What about the admissions test?

The admissions test is taken at your school or exam centre and used as part of the college admissions process. It has two sections: Section 1: Maths and Science MCQs (80 minutes), and Section 2: Science-specific longer questions (40 minutes).

5. Will the Cambridge Natural Sciences Degree contain enough physics?

The 4-year Master's Degree in Physics takes students to the frontiers of physics knowledge, and prepares students for research and many other exciting careers. The great strength of the Natural Sciences course is that it allows students to experience degree-level science in the first two years before choosing their preferred specialisation. In addition, because much modern research is interdisciplinary, the broad nature of Natural Sciences teaching helps to provide a strong foundation for research.

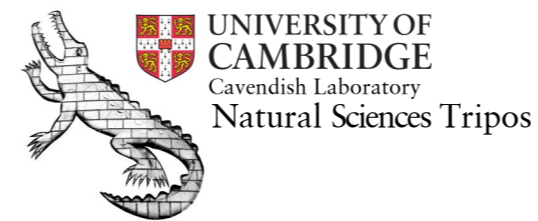
6. Is it more expensive to study at Cambridge?

Tuition fees at Cambridge are the same as almost every other university in the country and we also have one of the most extensive bursary schemes.

<http://www.cam.ac.uk/admissions/undergraduate/finance/>

7. How much work is it?

In the first year there will be approximately 25 hours of timetabled work in each of the 8 weeks of full term; this includes: lectures, practicals, and supervisions. In addition, you will be expected to do around 20 hours of personal study each week.



PHYSICS



Study at the top* physics department in the UK

Cambridge's Department of Physics, the Cavendish Laboratory, produces world-class research in a broad range of fields and teaches an advanced degree programme, including both 3-year (BA) and 4-year (MSci) options. Each year around 130 students graduate in Physics, making it one of the largest Natural Sciences disciplines. Nearly half of these graduates go on to higher research degrees, joining PhD programmes in the UK and worldwide; the other half pursue a wide range of careers including education, business, and finance.

	Rank	University Name	Entry Standards	Student Satisfaction	Research Quality	Graduate Prospects	Overall Score
▼	1st	▶0 Cambridge	626	4.20	3.29	87	100.0
▼	2nd	▲2 St Andrews	552	4.61	3.33	82	98.6
▼	3rd	▼1 Oxford	608	3.98	3.34	87	98.5

* 2017 Data: <https://www.thecompleteuniversityguide.co.uk/league-tables/rankings?s=Physics+%26+Astronomy>

Routes through Physics

1st Year (IA)

Choose 3 + Maths

- Physics
- Mathematics
- Chemistry
- Materials Science
- Earth Sciences
- Biology of Cells
- Physiology of Organisms
- Evolution & Behaviour
- Computer Science

2nd Year (IB)

Choose 3

- Physics A
- Physics B
- Mathematics
- Materials Science
- Chemistry A
- Chemistry B
- Earth Sciences A
- Earth Sciences B
- Biochemistry & Molecular Biology
- History & Philosophy of Science
- Many Other Biological Options

3rd Year (II)

Core Courses

- Thermal & Statistical Physics
- Relativity
- Advanced Quantum Physics
- Optics & Electrodynamics
- Choose 3 or 4
- Astrophysical Fluid Dynamics
- Particle & Nuclear Physics
- Quantum Condensed Matter
- Soft Condensed Matter
- Computational Physics
- Further Work (choose 3+)
- Experiment E1
- Experiment E2
- Computational Project
- Theory paper 1
- Theory paper 2
- Research Review
- Physics Education
- Long vacation project

4th Year (III)

Major Topics (choose 3+)

- Advanced Quantum Condensed Matter Physics
- Atomic & Optical Physics
- Particle Physics
- Physics of the Earth as a Planet
- Theories of Quantum Matter
- Relativistic Astrophysics & Cosmology
- Biological Physics
- Quantum Field Theory
- Minor Topics (Choose 3+)
- Exoplanets & Planetary Systems
- Formation of Structure in the Universe
- Frontiers of Observational Astrophysics
- Gauge Field Theory
- Medical Physics
- Non-linear Optics & Quantum States of Light
- Colloid Physics
- The Physics of Nanoelectronic Systems
- Phase Transitions
- Quantum Information
- Superconductivity & Quantum Coherence
- Atmospheric Chemistry & Global Change
- Materials, Electronics & Renewable Energy
- Climate Dynamics & Critical Transitions in the Climate System
- Advanced Quantum Field Theory
- Nuclear Power Engineering
- Mathematical Biology of the Cell
- Research Project
- General Paper

Example Specialisation Choices

Key

- Biophysics/Medical Physics
- Materials Physics
- Astrophysics
- Particle Physics
- Theoretical Physics/ Applied Maths
- Geophysics/Climate Science
- Micro/Optoelectronics & Quantum Physics
- Core Topics/All Choices

Interfaces with Other Courses

- Computer Science
- Alternative to one experimental subject in year 1 (no follow on option in year 2).
- Mathematics with Physics
- Enter through the Maths Tripos but take Physics from NST as 1/4 of course.
- Chemical Engineering
- Starts in year 2; can be approached via NST or Engineering.
- Part II “Physical Sciences” & “Biological & Biomedical Sciences”
- More general 3rd-year options, mixing elements of other courses.



Undergraduate study in Physics.

Physics at Cambridge is studied as part of the Natural Science Tripos (NST), which covers all the Physical and Biological Sciences, but is separate from Medicine, Engineering, and Mathematics. In the first year (Part IA) physicists (around 400 in total) also study two other experimental sciences and mathematics. In the second (Part IB) and third years (Part II) about 150 students choose to specialise in physics and mathematics. They can graduate at this point with a BA degree. Most of our students (around 120) choose to continue to a fourth year (Part III). In this year they take a range of master's level courses in physics and related disciplines, do an advanced research project, and graduate with an MSci degree.

The teaching term is short and intense (three terms of eight weeks) and in the first three years most of the assessment is by end of year examination.

The First Year (part IA):

Students make a free choice of three experimental subjects from Physics, Chemistry, Materials Science, Earth Sciences, Biology of Cells, Evolution and Behaviour, and Physiology of Organisms. In addition, all NST students reading Physics will take the NST Mathematics course. Paper 1 of Part IA of the Computer Science Tripos may be substituted for one of the three experimental subjects.



The course assumes *either* qualifications in A level Physics (or equivalent), or A level Further Maths (including three of the Mechanics modules). Ideally students would have done both Physics and Further Maths, but this is definitely not a requirement.

The Part IA Physics consists of three lectures per week, plus a four-hour experiment every two weeks. Topics covered include **Mechanics, Relativity, Fields, Oscillations and Waves, and Quantum Physics.**

Research at the Cavendish:

Alongside teaching the undergraduate courses, the academic staff of the Cavendish are actively engaged in a broad spectrum of physics research. The Cavendish is the largest physics department in the UK and our current research groups include: Astrophysics; Atomic, Mesoscopic & Optical Physics; Biological & Soft Systems; Quantum Sensors; High Energy Physics; Inference; Microelectronics; Nanophotonics; Optoelectronics; Quantum Matter; Surfaces, Microstructure & Fracture; Semiconductor Physics; Theoretical Condensed Matter Physics; and Thin Film Magnetism.

