



## Mathematics Information Sheet for entry in 2019

Mathematicians have always been fascinated by numbers. One of the most famous problems is Fermat's Last Theorem: ie if  $n \geq 3$ , the equation  $x^n + y^n = z^n$  has no solutions with  $x, y, z$  all nonzero integers. An older problem is to show that one cannot construct a line of length  $\sqrt[3]{2}$  with ruler and compass, starting with just a unit length.

Often the solution to a problem will require you to think outside its original framing. This is true here, and you will see the second problem solved in your course; the first is far too deep and was famously solved by Andrew Wiles.

In applied mathematics we use mathematics to explain phenomena that occur in the real world. You can learn how a leopard gets its spots, explore quantum theory and relativity, or study the mathematics of stock markets.

We will encourage you to ask questions and find solutions for yourself. You will need to think mathematically and we begin by teaching you careful definitions so that you can construct theorems and proofs. Above all, mathematics is a logical subject, so you will need to argue clearly and concisely as you solve problems. For some of you, this way of thinking or solving problems will be your goal. Others will want to see what further can be discovered. Either way, it is a subject we want you to enjoy.

### The course

There are two Mathematics degrees, the three-year BA and the four-year MMath. Decisions regarding continuation to the fourth year do not have to be made until the third year.

The first year consists of core courses in pure and applied mathematics (including statistics). Options start in the second year, with the third and fourth years offering a large variety of courses, including options from outside mathematics.

### A typical week

- Years 1 and 2: around ten lectures a week, two–three tutorials or classes a week
- Additional practicals in computing (first year) and numerical analysis (if taken)
- Years 3 and 4: six-ten lectures a week, with two–four classes a week, depending on options taken
- Compulsory dissertation in fourth year

Tutorials are usually 2-4 students and a tutor. Class sizes may vary depending on the options you choose. There would usually be around 8-12 students though classes for some of the more popular papers may be larger.

Most tutorials, classes, and lectures are delivered by staff who are tutors in their subject. Many are world-leading experts with years of experience in teaching and research. Some teaching may also be delivered by postgraduate students who are usually studying at doctorate level. To find out more about how our teaching year is structured, visit our [Academic Year](#) page.

### MMathPhys 4th year

The Physics and Mathematics Departments jointly offer an integrated master's level course in Mathematical and Theoretical Physics. Mathematics students are able to apply for transfer to a fourth year studying entirely mathematical and theoretical physics, completing their degree with an MMathPhys. The course offers research-level training in: Particle physics, Condensed matter physics, Astrophysics, Plasma physics and Continuous media. For full details see [mmathphys.physics.ox.ac.uk](http://mmathphys.physics.ox.ac.uk).



**Course structure**

|  |   |
|--|---|
| <b>1st year</b>  |   |
| <p><b>Courses</b><br/>Compulsory 1st year includes:</p> <ul style="list-style-type: none"> <li>• Algebra</li> <li>• Analysis</li> <li>• Probability and statistics</li> <li>• Geometry and dynamics</li> <li>• Multivariate calculus and mathematical models</li> </ul>  | <p><b>Assessment</b><br/>First University examinations:<br/>Five compulsory papers<br/>Computational mathematics projects</p>   |
| <b>2nd year</b>  |   |
| <p><b>Courses</b></p> <ul style="list-style-type: none"> <li>• Compulsory core of Algebra, Complex analysis, Metric spaces, Differential equations</li> <li>• Selection from topics including Algebra; Number theory; Analysis; Applied analysis; Geometry; Topology; Fluid dynamics; Probability; Statistics; Numerical analysis; Graph theory; Special relativity; Quantum theory</li> </ul>   | <p><b>Assessment</b><br/>Final University examinations, Part A:<br/>Three core papers and six or seven optional papers<br/>Currently an upper second over Parts A and B, as well as an upper second in Part B alone, is required to progress to Part C.</p>   |
| <b>3rd and 4th years</b>   |   |
| <p><b>Courses</b><br/>Large variety, ranging across: Algebra; Applied and numerical analysis; Algebraic and differential geometry; Algebraic and analytic topology; Logic and set theory; Number theory; Applied probability; Statistics; Theoretical and statistical mechanics; Mathematical physics; Mathematical biology; Mathematical geoscience; Networks; Combinatorics; Information theory; Actuarial mathematics; Undergraduate ambassadors scheme; Dissertation; Mathematical philosophy; Computer Science options; History of mathematics<br/><i>The options listed above are illustrative and may change. A full list of current options is available on the <a href="#">Maths website</a>.</i></p> | <p><b>Assessment</b><br/>3rd year: Final University Examinations, Part B: Eight papers or equivalent<br/>4th year: Final University Examinations, Part C: Eight papers or equivalent<br/>Classification on Parts A and B:<br/>Currently an upper second over Parts A and B, as well as an upper second in Part B alone, is required to progress to Part C. Separate classification on Part C.</p> |

The University will seek to deliver each course in accordance with the descriptions set out above. However, there may be situations in which it is desirable or necessary for the University to make changes in course provision, either before or after registration. For further information, please see the University’s Terms and Conditions.

**Fees**

These annual fees are for full-time students who begin this undergraduate course here in 2019.

| Fee status                                 | Annual Course fees |
|--|--------------------|
| Home/EU                                    | £9,250             |
| Islands<br>(Channel Islands & Isle of Man) | £9,250             |
| Overseas                                   | £27,240            |

Information about how much fees and other costs may increase is set out in the University’s Terms and Conditions.

**Additional Fees and Charges Information for Mathematics**

There are no compulsory costs for this course beyond the fees shown above and your living costs.

**Living costs**

Your living costs will vary significantly dependent on your lifestyle. These are estimated to be between £1,058 and £1,643 per month in 2019-20. Each year of an undergraduate course usually consists of three terms of eight weeks each but you may need to be in Oxford for longer. As a guide you may wish to budget over a nine-month period to ensure you also have sufficient funds during the holidays to meet essential costs.

|                                     | Per month     |               | Total for 9 months |                |
|-------------------------------------|---------------|---------------|--------------------|----------------|
|                                     | Lower range   | Upper range   | Lower range        | Upper range    |
| Food                                | £265          | £371          | £2,387             | £3,342         |
| Accommodation (including utilities) | £566          | £739          | £5,093             | £6,655         |
| Personal items                      | £122          | £271          | £1,098             | £2,435         |
| Social activities                   | £42           | £126          | £380               | £1,138         |
| Study costs                         | £40           | £88           | £359               | £788           |
| Other                               | £23           | £48           | £208               | £432           |
| <b>Total</b>                        | <b>£1,058</b> | <b>£1,643</b> | <b>£9,525</b>      | <b>£14,790</b> |

In order to provide these likely living costs, the University and the Oxford University Students’ Union conducted a living costs survey to complement existing student expenditure data from a variety of sources including the UK government’s Student Income and Expenditure Survey and the National Union of Students (NUS). The likely lower and upper ranges above are based on a single student with no dependants living in college accommodation (including utility bills) and are provided for

## UNDERGRADUATE ADMISSIONS AND OUTREACH

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information only. When planning your finances for future years of study at Oxford beyond 2019-20, you should allow for an estimated increase in living expenses of 3% each year.