

# Maths



## NAME OF COURSE

Mathematics  
(and Statistics/Philosophy/  
Computer Science)

## LENGTH OF COURSE

BA – 3 years  
MMath – 4 years

## A-LEVELS REQUIRED

- Maths
- Further Maths (if FM available for you to take at your school)

## MINIMUM A-LEVEL GRADE REQUIREMENTS

A\*AA

## ADMISSIONS TEST

**MAT** - it is set with the aim of being approachable by all students, including those without Further Mathematics A-level. It aims to test the depth of mathematical understanding of a student rather than a breadth of knowledge. It is used alongside the UCAS application when deciding which applicants to offer an interview to. To prepare for the MAT, some of the best advice can be found here: <https://www.thestudentroom.co.uk/showthread.php?t=6681188>

## COURSE DESCRIPTION

The course equips students with vital analytical skills and introduces them to fundamental mathematical concepts in the first and second years of the course. Students then have a broad range of options in their third and fourth years and can either use this to hone in on specific areas of interest or maintain the breadth offered in the first two years. To highlight the breadth available, topics available in 3rd and 4th year include: Machine Learning, Quantum Mechanics, Number Theory and Logic (though the full list is much, much longer than that!).

## STRUCTURE OF MODULES

**First year:** 5 exams sat at the end of the year accounting for 94% of the first year average, 2 pieces of Computational Mathematics work submitted in Hilary (2nd) Term (Coding experience not required!) accounting for 6% of the first year average. First year exams do not count towards the degree. No elective modules.

**Second year:** 9 or 10 exams taken at the end of the year. Students choose up to 6 out of a choice of 10 modules and 3 modules are chosen for them. 1 double module, 7 or 8 full single modules and 3 half modules taken over the course of the year. Second year exams account for 40% of the BA classification.

**Third year:** Varies largely depending on modules chosen. Third year accounts for 60% of the BA classification.

**Fourth year (optional):** Students must achieve a 2.1 or better at the end of the first 3 years to qualify for the fourth year, and those who qualify also have the option to graduate after 3 years and not do the fourth. Fourth year accounts for 100% of the MMath classification, and those who do the fourth year will graduate with an MMath degree with 2 classifications – 1 for the first 3 years and 1 for the 4th.

## APPROXIMATE NO. OF CONTACT HOURS PER WEEK

**Tutorials:** 3-6 hours

**Lectures:** 10-14 hours

## TUTORIAL TESTIMONIAL

You will have around 10 lectures a week and 5 problem sheets due each week. Each problem sheet should take about 5-6 hours to complete giving a total of approximately 35-40 hours of work a week. For maths, we are rarely set tutorial work before a tutorial. A tutorial will always consist of you, another mathmo and a tutor working through a problem sheet. Some tutors prefer to be very interactive, asking questions about the course in general whilst others like to simply work through the problem, expecting you to listen and ask questions if needed. Lectures before lockdown would consist of two 50 minutes lectures of a lecturer going through a part of the course on the board with a 10 minute break in between. For first years lectures tend to be 9am-11am, Monday-Friday. The purpose of tutorials is for a student to go through a completed problem sheet with their tutor and dive into any difficulties they had with the sheet.

## PERSONAL STATEMENT TIPS

- 'Show me don't tell me' is a great place to start. Think of all the events you have attended, books you have read and challenges you have participated in to show your passion for the subject
- Try to show you have gone above and beyond to learn more about your subject. For instance, taking extra modules
- Write about a variety of different ways in which you have shown that you have a genuine interest in your subject

## INTERVIEW TIPS

- Tutors care more about how you arrived at the answer rather than the actual answer itself
- Explaining your thought process out loud is key. If you are not sure about a question, say what you know and where you think that information will take you. Try not to stay quiet and figure it out in silence as the tutors want to know what your thought process for approaching a question is
- You will most likely be asked to sketch a graph at one point and it's really important to get the key information down first. For instance, what happens as  $x$  tends to  $\pm$ infinity? What are the points of intersection? Any asymptotes? Stationary points?
- Ensure you read through your teacher's reference and personal statement before your interview as it is possible they might ask you about some aspect of these as a starting point

## MAT TIPS

- It's best to start with STEP papers as they are harder. The MAT papers are limited in number so leaving these to do last under timed conditions is much better. Thus, once you come to attempting the MAT papers, you will find them easier in comparison to STEP
- If you run out of time/are unsure of the answer, still write something down e.g. your thoughts, instead of leaving it blank

## ONE THING I WISH I KNEW WHEN I WAS APPLYING

College choice can make a significant difference to your learning experience! Try to speak to current or former Maths students before applying as they are the best resource for finding out about colleges.

## CAREERS

A lot of graduates end up going into further study. Other popular choices finance or technology with the more computer science inclined tending to the latter. However, maths is such a broad degree you can go into any career due to the transferable skills developed during the course. Other careers include: accounting, teaching, consulting, logistics, statistical research, AI and programming, engineering, and more!

## EXAMPLE TIMETABLE

On the weekends, it depends how much there is to do. Some weekends are very busy, consisting of spending the day in the library trying to meet deadlines. Others can be quite relaxed, going out with friends for a meal! As the weeks go on, the weekends can become more work focused.

Time		Monday	Tuesday	Wednesday	Thursday	Friday
9.00-10.00	LECTURES					
10.00-11.00		Probability Mathematical Institute, L2	Quantum Theory Mathematical Institute, L2	Probability Mathematical Institute, L2	Quantum Theory Mathematical Institute, L2	
11.00-12.00		Metric Spaces and Complex Analysis Mathematical Institute, L1	Differential Equations Mathematical Institute, L1	Linear Algebra Mathematical Institute, L1	Metric Spaces and Complex Analysis Mathematical Institute, L1	
12.00-13.00			Linear Algebra Mathematical Institute, L1	Metric Spaces and Complex Analysis Mathematical Institute, L1	Differential Equations Mathematical Institute, L1	Metric Spaces and Complex Analysis Mathematical Institute, L1
13.00-14.00	LUNCH BREAK					
14.00-15.00	TUTORIALS	Linear Algebra Tutorial Hand-in - Saturday 5pm	Quantum Theory Tutorial (weeks 5, 7) Mathematical Institute			
15.00-16.00				Differential Equations 1 Tutorial (weeks 2, 4, 6, 8) Hand-in - Monday 8am		
16.00-17.00			OPAL Arabic Course Oxford Languages Centre		Metric Spaces and Complex Analysis Tutorial (week 2 onwards) Hand-in - Tuesday 6pm	Probability Tutorial (weeks 2, 4, 6, 8) Hand-in - Thursday 2pm @ Merton
17.00-18.00						

## RECOMMENDED READING/VIEWING

### Books

- **A very short introduction to Mathematics** by Timothy Gowers
- **Solving Mathematical Problems** by Terence Tao
- **Beyond Infinity** by Eugenia Cheng (infinity is a really interesting concept and it can be hard to develop an intuition for it)
- **Things to Make and Do in the Fourth Dimension** by Matt Parker (shows the fun side of Maths, a very light and fun read)

### YouTube Channels

- **BlackpenRedpen** (more useful for A level maths rather than developing a better understanding of the wider concepts in mathematics)
- **Numberphile** (great variety of topics covered, featuring loads of interesting areas of maths)
- **3Blue1Brown** (explores lots of visual areas of mathematics and presents some strange and interesting results)