

$$\text{Curl}(\underline{a}) = \begin{vmatrix} \underline{i} & \underline{j} & \underline{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ a_1 & a_2 & a_3 \end{vmatrix} = \begin{pmatrix} \dots \\ \dots \\ \dots \end{pmatrix}$$

$$\nabla \equiv \underline{i} \frac{\partial}{\partial x} + \underline{j} \frac{\partial}{\partial y} + \underline{k} \frac{\partial}{\partial z}$$

$$\text{div}(\underline{a}) = \nabla \cdot \underline{a}$$

$$\text{Curl}(\underline{a}) = \nabla \times \underline{a}$$



# Welcome to Mathematics



I am delighted that you are considering studying Mathematics with us. Our department is a lively and friendly place with an international reputation for the quality of its teaching and research.

We offer a flexible approach to study within a developmental structure, so that you can follow your strengths and interests within an exceptionally supportive community.

Mathematics is not only widely applicable, it is also beautiful. Studying mathematics at an advanced level can be deeply satisfying; finding the solution of a difficult mathematical problem is uniquely thrilling and requires a high level of creativity, logical thinking and analytical abilities. You'll acquire an invaluable portfolio of skills that will set you apart in your future career.

We invite you to join us at one of our open days and look forward to welcoming you here.

**Professor Rüdiger Schack**  
Head of Mathematics



**14<sup>th</sup>**  
in the UK for student  
to staff ratio

*(Guardian University Guide, 2022)*

## Contact details

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### General enquiries


EPMS-school@royalholloway.ac.uk

### Course enquiries

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### Connect with us

 @RHULMaths

 MathsRHUL

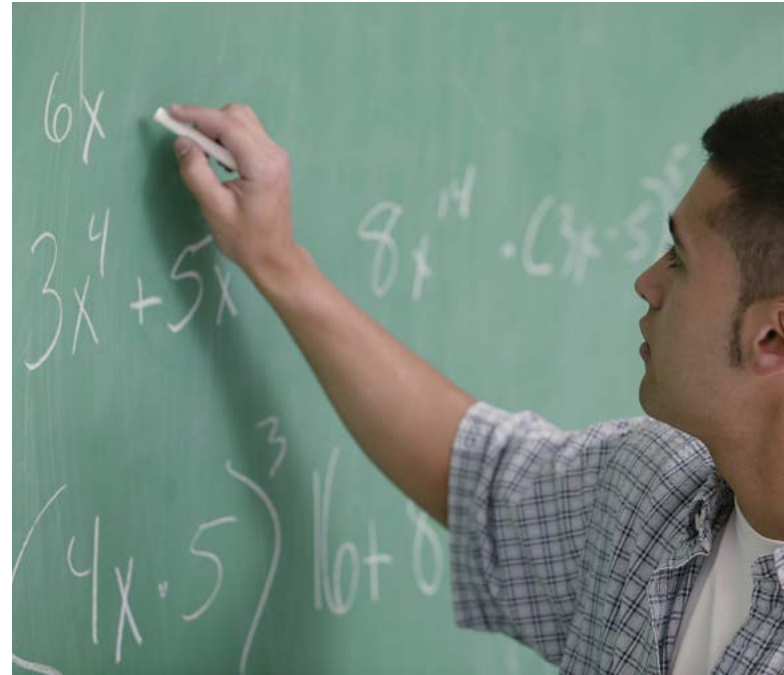
[royalholloway.ac.uk/mathematics](http://royalholloway.ac.uk/mathematics)

# Mathematics at Royal Holloway

Mathematics is one of the oldest academic disciplines, and yet today many areas of modern life are based on, and would not exist without, mathematical ideas, from mobile phones, the internet and satellite navigation to financial markets, weather forecasts, insurance and drug testing.

At Royal Holloway we pursue research in a wide range of topics in pure, applied and applicable mathematics, including algebra, discrete mathematics, number theory, quantum dynamics, information security and probability and statistics. This strong research culture influences our curriculum, and academic staff bring their expertise into their teaching, helping students to keep in touch with the latest developments in the field. We offer:

- research excellence that informs our teaching: our staff's passion and enthusiasm for the subject transmits through their teaching
- we understand the needs of employers and can equip our graduates with the knowledge and skills to take their mathematics to the highest levels, in research, science or industry
- a flexible curriculum of degree courses which enable you to mix mathematics with other subjects and explore your broader interests
- an inclusive learning environment, with a personal adviser system and an emphasis on small-group teaching, problem solving sessions and group tutorials creating a friendly and motivating atmosphere where you'll be known as an individual.



**2<sup>nd</sup>** for research  
impact

(THE REF institutions ranked by subject, 2014)

**13<sup>th</sup>** for research  
quality

(Guardian University Guide, 2022)

# Choosing your degree

Our degree courses are designed to stimulate and challenge you through a varied curriculum, including pure mathematics, statistics, quantum mechanics, informatics, and financial mathematics.

Mathematics is a subject that can be studied on its own, or combined with a variety of other academic subjects. It is sometimes difficult to know which combination to choose, and we provide as much flexibility as we can in the early stages of our degrees.

At the centre of our teaching portfolio are two specialist degrees: the MSc in Mathematics (a four-year degree), and the BSc in Mathematics (a three-year degree). We also offer a BSc in Mathematics with Statistics, concentrating on the theory and applications of statistics.

Alternatively, you can choose from a variety of degree courses that are shared between mathematics and another subject: these combinations provide an opportunity for you to pursue your other interests. We also offer a flexible BSc Mathematical Studies that is rooted in mathematics but allows other academic interests to be pursued alongside the mathematical heart of the programme.

## Undergraduate study

All undergraduate degree courses at Royal Holloway are based on the course module system, providing an effective and flexible approach to study, while ensuring that our degrees have a coherent and developmental structure. In the case of some of our combined degrees, it also makes it possible to change the balance of your subjects during your studies.

For details of current module options, and our entry requirements, please see our website [royalholloway.ac.uk/courses](http://royalholloway.ac.uk/courses)

| DEGREES   | UCAS code | Duration |
|---|-----------|----------|
| BSc Mathematics                                   | G100      | 3 years  |
| MSci Mathematics                                  | G103      | 4 years  |
| BSc Mathematics with Statistics                   | G1G3      | 3 years  |
| BSc Mathematical Studies                          | G150      | 3 years  |
| BSc Mathematics (with Integrated Foundation Year) | G10F      | 4 years  |
| MATHEMATICS AS A MAJOR SUBJECT                    |           |          |
| BSc Mathematics with French                       | G1R1      | 3 years  |
| BSc Mathematics with German                       | G1R2      | 3 years  |
| BSc Mathematics with Italian                      | G1R3      | 3 years  |
| BSc Mathematics with Philosophy                   | G1V5      | 3 years  |
| BSc Mathematics with Spanish                      | G1R4      | 3 years  |
| JOINT DEGREES                                     |           |          |
| BSc Computer Science & Mathematics                | GG41      | 3 years  |
| BSc Economics & Mathematics*                      | LG11      | 3 years  |
| BSc Finance & Mathematics*                        | NG31      | 3 years  |
| BA Mathematics & Music                            | GW13      | 3 years  |
| BSc Mathematics and Philosophy                    | GV15 3    | 3 years  |
| BSc Mathematics & Physics                         | GF13      | 3 years  |
| MSci Mathematics & Physics                        | GFC3      | 4 years  |

\* Also available with a Year in Business, these courses have different UCAS codes.



# Studying here

Mathematics at Royal Holloway is not just about collecting skills and information for a future career, it is also about developing a feel for the subject in many different, often small, ways, and becoming part of a community of people who care about the subject.

There is more to learn in a mathematics course than the material presented in lectures. You must be able to convince yourself of the validity of a piece of mathematics and to present results to others in an intelligible way – to explain something you have just learnt (or, even better, just discovered) can be deeply satisfying.

We use a variety of teaching methods, including lectures, problem-solving workshops and tutorials in small groups. As mathematics is only learnt by practice, we support every course with weekly worksheets, and giving feedback is a vital part of the teaching and learning process.

The core mathematical skill of problem solving is hugely valuable to employers. To complement this, we will help you develop a range of other employability skills, carefully integrated with the mathematical content, such as giving oral presentations, IT skills and learning computer programming. These also help develop your independence, from small challenges, such as cracking cryptographic ciphers, to offering freedom to choose your own path, such as your bidding strategy in a live stock market simulation. From your third year, you'll work on your own mathematical projects, supported by a subject specialist.

## Research

Our research interests continue to expand, from number theory and cryptography to quantum dynamics and information theory, influencing our curriculum, particularly in the final year. As an undergraduate your studies will be enriched by the international quality of the research at Royal Holloway. Exposure to these subject areas will help you to develop the tools to apply your mathematics in real-life situations.



# Student Life

At Royal Holloway, we offer plenty of extra-curricular activities for you to get involved in to broaden your student experience, meet like-minded people and gain skills to boost your CV.

You can join our Apex Club or our Mathematics Society, for mathematics students and others, to share interests and attend social and academic events together. There are regular seminars and special lectures introducing you to cutting-edge aspects of mathematics beyond the curriculum. There are also opportunities to get involved with volunteering and outreach activities, including the Royal Holloway Science Festival.

The university has a vibrant social scene and a friendly campus environment, bringing students together through a mix of events, ranging from pub quizzes and trips, to activities organised by our dynamic Students' Union and a host of clubs and societies.



## Our community

The department has earned an international reputation for our research, reflected in our strong performances in research assessment exercises, in recruiting PhD students and post-doctoral researchers and in attracting research grants. Through our research, we aim to extend the boundaries of the subject and make a difference in the real world. We are closely aligned with the internationally-renowned Information Security Group (ISG) which offers a Masters in Information Security and is home to the EPSRC Centre for Doctoral Training (CDT) in Cybersecurity for highly trained researchers.

Our compact size helps to promote a friendly and inspiring atmosphere where students are known as individuals. Staff are always ready to give help and advice, and a member of staff is also assigned to you as a Personal Adviser to help you with any queries or difficulties and guide you in your choice of courses. Typically, your Personal Adviser will be the person who writes your job references in the final year.

# Your future career

Study Mathematics with us and you will open up a wealth of fulfilling career paths or opportunities for further study.

Throughout your degree, you will gain a diverse range of transferable skills and learn how to apply the universal language of mathematics in a multiplicity of situations. Mathematics is also the central tool in the physical and natural sciences as well as in other disciplines such as finance, economics, management and IT.

Mathematics graduates are in great demand because they are logical, numerate, have careful analytical skills, and are confident in handling formulae or large data sets. These skills are in short supply in many key areas of industry, finance and government.



“My degree certainly helped me progress onto my Masters, as academically it is a very well respected university. This was also noted upon my entry onto the graduate scheme at McLaren. The support I gained at Royal Holloway was also amazing, supporting me through my Masters application and also for a PhD I applied for and support with my CV.”

**Katie Lawrence**  
BSc Mathematics  
Performance Engineer at Land Rover BAR

We provide opportunities for you to develop your skills and prepare yourself effectively for graduate jobs. We have a competitive placement scheme open to all our second year students to gain valuable work experience.

All students are well supported by the university's Careers Service, offering advice on careers, completing application forms and preparing for an interview. They also hold regular sessions, specifically for mathematics students, on summer internships, vacation employment and the careers available to them on graduation.

We have signed up to the Code of Practice of the London Mathematical Society's Teaching Mathematics as a Career (TeMaC) initiative, which aims to support Mathematics departments in developing activities that help students to explore pathways into the teaching profession.

Our graduates are working for well-known organisations such as KPMG, Ernst & Young, Ministry of Defence, Lloyds Banking Group, Logica, McLaren, TowersWatson, BBC and the Department of Health.



**Degrees that develop  
the maths skillset  
employers seek**

This brochure was produced in February 2022 and information was correct at that time. Please make sure you check our website or contact us directly for the very latest information if you are considering an application.



## Royal Holloway, University of London

- Learn from world leading experts
- Highly ranked for student satisfaction
- Beautiful campus in a safe location
- Vibrant and active community
- Award-winning careers service

### Visit us to find out more

Our Open Days are a great way to get a feel for life at Royal Holloway. Look around the campus, meet our students and staff, and find out more about studying and living here.

Find out more and register to attend at [Royalholloway.ac.uk/opendays](https://royalholloway.ac.uk/opendays)

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