University of Birmingham

Mathematics and Computer Science with Industrial Year BSc

Undergraduate degree course Mathematics and Computer Science with Industrial Year BSc GGD4:

One of the longest established of disciplines, and underpinning many others, mathematics is the language of science and engineering and an intellectual field in its own right. It speaks without barriers across time. It is a discipline that is forever opening up to us, revealing new and fascinating truths and ideas, and helping to expand upon our knowledge in all directions.

At the **School of Mathematics (http://www.birmingham.ac.uk/schools/mathematics/)** in Birmingham we are internationally renowned for our world-leading research and research-led teaching and are committed to providing a challenging, first rate, education to all of our students in a friendly and supportive environment. Consistently ranked amongst the top UK Mathematics centres, we excel at developing our students' thought processes, helping them to become more analytical and able to rapidly identify and solve problems.

A warm welcome is extended to you to come and join us, so that we can help you to expand upon your knowledge and understanding of the world through the exquisite language of mathematics.

Study here and find out why the University of Birmingham has been awarded The Times and The Sunday Times University of the Year 2013-14 (http://www.birmingham.ac.uk/news/latest/2013/09/20-sep-Birmingham-announced-as-University-of-the-Year.aspx)

Course fact file

UCAS code: GGD4

Duration: 3 + 1 (in industry) years for BSc

Places Available: 210 (on all Mathematics programmes)

Applications in 2014: 1432

Typical Offer: AAA (**More detailed entry requirements and the international qualifications accepted can be found in the course details (?OpenSection=EntryRequirements)**)

Start date: September

Related courses

Maths undergraduate degree courses - School of Mathematics (/schools/mathematics/undergraduate/index.aspx)

Contact

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School of Computer Science (/schools/computer-science/index.aspx)

School of Mathematics (/schools/mathematics/index.aspx)

Details

This three-year course has a student satisfaction rating of 96%.

A degree in Mathematics and Computer Science will allow you to develop many of the skills you would gain from the corresponding Single Honours programmes, with the advantage of studying both of these closely related subjects.

Mathematicians use computers to solve complex equations, analyse large data sets and even to prove theorems. Computer scientists use mathematics to design efficient compression algorithms, to understand the semantics of programming languages and for the theory behind internet security systems.

The BSc degree gives you a choice of modules in both Mathematics and Computer Science, with a chance to do project work in either subject. The Industrial Year offers you the opportunity to work on placement with a company.

First year

The first two years are carefully designed to allow you as much choice as possible in your final year. In the first year you study core calculus and algebra and either applied mathematics or discrete mathematics and statistics. In Computer Science you study the foundations of computer science together with program design and programming techniques.

Second year

You take modules in advanced calculus and algebra, management mathematics, algorithms, data structures and logic. Your interests will develop towards either software engineering or the more mathematical themes that involve computation.

Third year

In your third year you will go on industrial placement, working for a company or other appropriate institution, developing your computer and mathematical skills in the workplace setting.

Fourth year

The fourth year offers you a choice of modules with the possibility of specialising in either Mathematics or Computer Science. Project modules, particularly in Computer Science, are encouraged.

Generic skills-training, focusing on transferable skills and employability, is embedded throughout the course from the outset, and will ensure that you are equipped with the ICT, presentation, team-working and problem–solving skills which will enhance your employability on graduation. Project and programming work in particular help to develop these skills.

BSc or MSci? The first two years of this BSc course are interchangeable with, and identical to, our **MSci programme (GG41) (/undergraduate/courses/maths/maths-computer-science-industrial-msci.aspx)**, which means you can delay your final choice of degree (BSc or MSci) until the end of Year 2. MSci study is dependent upon performance so you will need to successfully complete Year 2 with a high 2ii to transfer on to the MSci programme.

Other options

- **Maths undergraduate degree courses (/schools/mathematics/undergraduate/index.aspx)**
- **Undergraduate degrees in Computer Science (http://cs.bham.ac.uk/admissions/undergraduate/)**

Related links

- **Grants and scholarships (/schools/mathematics/undergraduate/grants-scholarships.aspx)**

Why study this course

Studying any mathematics course at Birmingham will expand your knowledge and understanding of the world, helping you to become a sought-after graduate wherever there is a call for logical thinking and statistical or strategic knowledge.

At Birmingham, we provide a first-rate education that involves a range of learning environments, developing many skills to prepare you for future employment or further study. The School of Mathematics was one of only two maths departments in the country to be awarded full marks in the last national Assessment of Quality in Education.

The Mathematics Learning Resource Centre here provides an excellent environment for undergraduates to work independently, in groups, or with help from postgraduate students.

From 2000-2011, the university housed the national headquarters of the **Maths, Stats & OR Network (MSOR) (http://www.birmingham.ac.uk/schools/mathematics/MSOR/index.aspx)**, a subject centre of the Higher Education Academy. Between August 2009 and July 2012 we host a major national education programme that champions **Science, Technology, Engineering and Mathematics (STEM) (http://www.hestem.ac.uk/)** teaching at universities throughout England and Wales.

Fees and funding

Standard fees (http://www.birmingham.ac.uk/students/ug/courses/fees/standard) apply
Learn more about **fees and funding (/undergraduate/fees/loans.aspx)**
Scholarships

Learn more about the University of Birmingham's **scholarships and awards (/undergraduate/fees/funding/index.aspx)**.

The School of Mathematics offers a range of scholarships; further details can be found by visiting our **School of Mathematics undergraduate grants and scholarships page (/schools/mathematics/undergraduate/grants-scholarships.aspx)**.

Entry requirements

Number of A levels required: 3

Typical offer: AAA

Required subjects and grades: A level Mathematics at grade A; Computing A level is not required but some experience of programming would be advantageous; Further Mathematics is not required, but would be advantageous.

General Studies: not accepted, but a grade A may be considered if you fail to meet your offer

Additional information:

Other qualifications are considered – learn more about **entry requirements (http://www.birmingham.ac.uk/students/ug/requirements)**. We are happy to discuss your individual offer with you.

International students:

International Baccalaureate Diploma: 36 points, including 6 points in Mathematics at HL.

Learn more about our **standard English language requirements (/undergraduate/requirements/international/index.aspx)** on the International student entry page.

Learn more about **international entry requirements (http://www.birmingham.ac.uk/students/ug/requirements/international)**.

Depending on your chosen course of study, you may also be interested in the Birmingham Foundation Academy, a specially structured programme for international students whose qualifications are not accepted for direct entry to UK universities. Further details can be found on the **foundation academy web pages (http://www.birmingham.ac.uk/students/foundation-academy/Pathways/index.aspx)**.

How to apply

Apply through UCAS at **www.ucas.com (http://www.ucas.com/)**
Learn more about **applying (http://www.birmingham.ac.uk/students/ug/courses/apply)**

Key Information Set (KIS)

Key Information Sets (KIS) are comparable sets of information about full- or part-time undergraduate courses and are designed to meet the information needs of prospective students.

All KIS information has been published on the Unistats website and can also be accessed via the small advert, or 'widget', below. On the **Unistats website (http://unistats.direct.gov.uk)** you are able to compare all the KIS data for each course with data for other courses.

The development of Key Information Sets (KIS) formed part of HEFCE's work to enhance the information that is available about higher education. They give you access to reliable and comparable information in order to help you make informed decisions about what and where to study.

The KIS contains information which prospective students have identified as useful, such as student satisfaction, graduate outcomes, learning and teaching activities, assessment methods, tuition fees and student finance, accommodation and professional accreditation.

Related links

Scholarships and prizes, Undergraduates, School of Mathematics (/schools/mathematics/undergraduate/grants-scholarships.aspx)

Maths undergraduate degree courses - School of Mathematics (/schools/mathematics/undergraduate/index.aspx)

Learning and teaching

How will I be taught?

As a Birmingham student, you are joining the academic elite and have the privilege of learning from world-leading experts in the field of mathematics. Throughout your studies, you will be encouraged to become an independent and self-motivated learner, thriving on challenge and opportunities to think for yourself. Less formal, more independent study is a vital part of becoming a successful mathematician. So we encourage students to work together and have several popular study areas in and around the School where you can work with friends or individually.

Personal Tutor: At the start of your degree, you will be assigned a Personal Tutor who will remain with you throughout your studies until graduation, to help you in three important areas: supporting your academic progress, developing transferable skills and dealing with any welfare issues. You will meet your personal tutor at least once a semester to review your academic progress and discuss how to develop your transferable skills. Your personal tutor will also be able to advise on particular areas where you need additional support.

Delivery of the course
From the outset you will be encouraged to become an independent and self-motivated learner. We want you to be challenged and will encourage you to think for yourself.

Mathematics programmes are modular and divided between two teaching terms. Examinations take place in the summer term of each year. Learning takes place in several forms and settings. Our formal teaching comprises:

Lectures: Delivered in a variety of styles by enthusiastic staff, lectures form the major source of information for most modules.

Tutorials: Every week in your first year and every two weeks in your second year, you have small group meetings with your tutor. Here you will get to solve mathematical problems and discuss material introduced in lectures.

Examples classes: These focus on working through mathematical problems issued by the lecturer. Through examples classes, you will be able to check your learning and reflect on particular examples with the aid of experienced mathematicians. Examples classes are usually run by a lecturer with the help of one or more graduate students.

Supervisions: For some modules, instead of examples classes, we run smaller supervisions of 10 to 15 students where one lecturer goes through students' solutions to problems with the group.

Computer labs: Some modules are supported by computer labs using computer algebra packages to solve problems, programming languages to model mathematical situations or computer assessment systems to test your learning.

Web-based learning: All of our modules are linked to iVLE - a virtual learning environment that gives you access to lecture notes, additional learning units, self-tests and supplementary interactive information to support your learning.

Feedback: You receive regular feedback in all of your modules through marked work, model answers, tutorials, examples classes and supervisions.

Less formal, more independent study is a vital part of becoming a mathematician. We encourage students to work together and have several popular study areas in and around the School where you can work with friends or individually. Initially, you may find these ways of working challenging but there is a comprehensive support system assisting and encouraging you to settle in. You will be allocated a personal tutor for the duration of your degree programme and welfare tutors will be available for pastoral issues.

Assessment methods

Assessment varies across modules and can include:

- Examinations - usually taken at the end of the year in which the module is taught
- Coursework - this could be continuous or at the end of the module, and is assessed in a variety of ways.
- Class tests - some lecturers set regular class tests which could be written tests, group presentations or computer-based tests providing instant feedback.

Research projects are assessed by, for example, interim reports, a final written report and oral presentations.

During your first year the University will require you to undergo a formal **'transition' review (https://intranet.birmingham.ac.uk/student/transitionreview/index.aspx)** to see how you are getting on and if there are particular areas where you need support. This is in addition to the personal tutor who is based in the School and can help with any academic issues you encounter. The University?s Academic Skills Centre also offers you support with your learning. The Centre is a place where you can develop your mathematical, academic writing and general academic skills. It is the Centre?s aim to help you to become a more effective and independent learner through the use of a range of high-quality and appropriate learning support services. These range from drop-in sessions with support with mathematics and statistics based problems provided by experienced mathematicians, to workshops on a range of topics including note taking, reading, writing and presentation skills.

At the beginning of each module, you will be given information on how and when you will be assessed for that particular programme of study. You will receive feedback on each assessment within four weeks, so that you can learn from, and build on, what you have done. You will be given feedback on any exams that you take; if you should fail an exam we will ensure that particularly detailed feedback is made available to enable you to learn for the future.

Employability

Feedback shows that 85% of our students go on to work or study on graduation. Of those in employment, 80%-90% gain graduate-level jobs and are earning salaries in the region of £20,000-£28,000 pa six months after graduation.

Video transcript (http://www.birmingham.ac.uk/accessibility/transcripts/eps/maths/maths-careers-fair-2011.aspx)

Preparation for your career is one of the first things you should be considering when you start university. When you graduate from one of our mathematics programmes, you can expect to be able to pursue careers in any one of the major blue chip companies in sectors as diverse as finance and computing or in government, teaching or the NHS. Many of our students continue their studies to graduate level, taking masters programmes or PhDs. Wherever the application of logical thinking and statistical or strategic knowledge is called for, being one of our graduates will give you a head start.

Our degrees will help you to develop key skills such as analytic thinking, problem solving, independent research, report writing and the use of technical language. These skills are all highly sought after by employers.

You will have access to a wealth of professional careers advice, Our unique careers guidance service is tailored to your academic subject area, offering specialised expert advice and mentoring, as well as guidance to help you to secure exclusive work-experience opportunities and global internships, all of which will help you to stand out from the competition. And once you have a career in your sights, one-to-one support with CVs, interview practice and job applications will further help to give you the edge. In addition, our employer-endorsed, award-winning **Personal Skills Award (PSA) (https://intranet.birmingham.ac.uk/as/employability/psa/index.aspx)** recognises you extra-curricular activities, and provides an accredited employability programme designed to improve your career prospects.

You can also take advantage of:

- Frequent careers advice drop-in sessions in the School, so you can always get help and advice when you need it.
- An **annual Maths Careers Fair (http://www.birmingham.ac.uk/schools/mathematics/undergraduate/maths-careers-fair-2011.aspx)**, where you can meet employers specifically interested in mathematics graduates.
- Regular Careers Skills Workshops run by employers or the College employability team to guide you through your career planning and give you an advantage in the application process for graduate positions and internships.
- A fortnightly careers e-newsletter, including vacancies suited to maths students, with application deadlines and a calendar of careers events likely to be of interest to you as a maths student.

Some of our industrial relationships include:

- Actica Consulting
- Apple
- BMI
- BMW
- Carillion
- Emerson Process Management
- General Electric
- Goodrich Actuation
- Masternaut
- Renishaw
- RM Education
- Rockpool Digital
- Sidessa
- Thermofisher Scientific

Your Birmingham degree is evidence of your ability to succeed in a demanding academic environment. Employers target Birmingham students for their drive, diversity, communication and problem-solving skills, their team-working abilities and cultural awareness, and our graduate employment statistics have continued to climb at a rate well above national trends. If you make the most of the wide range of services you will be able to develop your career from the moment you arrive.

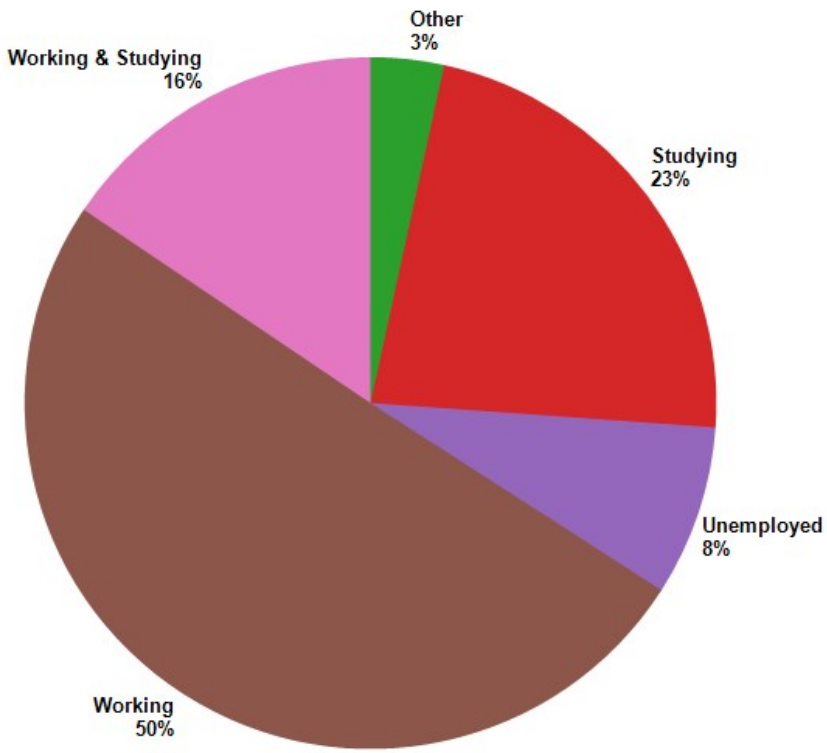
University Careers Network

Preparation for your career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or want to consider the broad range of opportunities available once you have a Birmingham degree, our Careers Network can help you achieve your goal.

If you make the most of the **wide range of services (https://intranet.birmingham.ac.uk/as/employability/careers/college/eps/index.aspx)** you will be able to develop your career from the moment you arrive.

Destinations of Leavers from Higher Education (DLHE) 2011/12

The DLHE survey is conducted 6 months after graduation.



Examples of occupations

- Actuarial Trainee
- Actuarial Consultant
- Actuary
- Analyst
- Associate Auditor
- Consultant
- Financial Analyst
- Management Accountant
- Secondary School Teacher
- Software Tester

Further study-examples of courses

- ACA - Accountancy
- ACCA - Accountancy
- MSc Accounting and Finance
- MSc Actuarial Science
- MSc Computing Systems
- MSc Finance and Investment
- MSc Operational Research
- MSc Statistics
- PGCE Mathematics
- PhD Applied Mathematics

Visit the **Careers section of the University website** **(https://intranet.birmingham.ac.uk/as/employability/careers/index.aspx)** for further information.

Additional accreditation **No**

BSc (Hons) Mathematics and Computer Science with Ind...
Full time
Sandwich year

To see more details and compare with other courses

Visit UNISTATS

Official data collected by HEFCE

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