# University of Birmingham

# Chemistry with Pharmacology MSci

## Undergraduate degree course/programme Chemistry with Pharmacology MSci F1BG:

As the central science, **Chemistry**is responsible for many of the most important breakthroughs in science. In taking some of the world's most exciting ideas and discoveries and turning these into innovative processes and products, its potential to improve our everyday lives is enormous.

**Pharmacology**is the science of drugs, specifically the study of both the toxic and therapeutic affects that chemical agents have on a biological system. Graduates from our Chemistry with Pharmacology degree programme therefore possess interdisciplinary expertise in two subjects that are integral to the pharmaceutical and life-sciences industries, which make a vital contribution to the UK's economy.

Study at Birmingham and you will join one of the UK's leading universities and have access to some of the best research facilities and teaching and learning resources in the country. Throughout your time with us, you will be constantly challenged as you push forwards the boundaries of your understanding, all within a supportive learning environment. By the time you graduate, you will be ready to forge an exciting career that shapes the future of science and society.

**Study here and find out why the University of Birmingham was 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:** F1BG

**Duration:** 4 years

**Places Available:** 107 (Total number of places for all Chemistry courses)

**Applications in 2014:** 814

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

**Start date:** September

### Related courses

**Chemistry undergraduate degree courses - School of Chemistry (/schools/chemistry/undergraduate/undergraduate-degree-courses.aspx)**

### Contact

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**School of Chemistry (/schools/chemistry/index.aspx)**

## Details

### Course Structure

Chemistry with Pharmacology is a **major–minor** degree programme, which has a 98% student satisfaction rating for Chemistry. The chemistry component comprises two thirds of the course in the first three years, with pharmacology making up the remaining third. You study just Chemistry in your fourth and final year. 120 credits of taught material are delivered each year, in modules that are typically worth 10 or 20 credits.

In Years 1–3, you will take 60 credits of core chemistry courses, covering the fundamental aspects of the subject. These courses include a significant practical component, which not only allows you to develop your practical skills and techniques, but also to consolidate the associated theory from your lectures. You will also take 40 credits of pharmacology each year. This aspect of the course is taught by staff from the University's Medical School. The remaining 20 credits in each year comprise modules designed to support these core courses and include optional chemistry courses, mathematics courses and modules focusing on developing IT and communications skills and enhancing employability.

You study just Chemistry in your fourth and final year. There is significant flexibility in this year, as you choose 40 credits of taught modules from a range of courses pitched at the cutting edge of the chemical sciences. A major research project makes up the remaining 80 credits. For many, your final-year project is the most exciting and enjoyable part of your degree and often influences the career pathway you choose to follow after graduating.

### First year

In Year 1, you will take **core modules** in the traditional sub-disciplines of **inorganic**, **organic** and **physical chemistry**, all of which include an extensive laboratory work programme. The **pharmacology** component in Year 1 includes an introduction to pharmacology, along with modules on physiology and cell biology.

Those of you who do not have A-level maths – don't worry! We provide an **introductory maths** course in Semester 1, which will bring you up to speed with the common mathematical techniques needed for chemistry. Those of you who do have A-level maths at grade B or higher take an IT/transferable skills course instead. In Semester 2, everyone comes together to take **Numerical Methods**. In this more advanced course, you will begin to apply your mathematical skills to chemical problems. Both maths courses are delivered by staff from Chemistry, which ensures you are equipped with those skills you need to tackle the more physical and theoretical aspects of our courses.

### Second year (contributes 20% to overall degree mark)

In Year 2, you will build on material from your first year as we employ a mix of lectures and practicals to develop further your understanding of the fundamental aspects of chemistry. In addition to these core courses in organic, inorganic and physical chemistry, you will take pharmacology modules in systems pharmacology, pharmacokinetics and pharmacogenetics, and a particularly popular module entitled "Good Brain–Bad Brain", which focuses on the workings of the brain, its molecules and cells, and considers how these may become altered in neurological and psychiatric disease states.

### Third year (contributes 40% to overall degree mark)

In addition to modules in core chemistry, you will choose from a range of specialist modules in the pharmacology component of the course, including molecular and integrative pharmacology and drug discovery. A research project in some aspect of pharmacology also forms part of this year.

### Fourth year (contributes 40% to overall degree mark)

You focus on just Chemistry in this, your final, year, choosing from a range of courses that reflect the state-of-the-art of the discipline. Modules covering metals in medicine, carbohydrate chemistry, and drug design are particularly popular choices for students on our Chemistry with Pharmacology degree programme. The breadth of available modules, however, also allows us to showcase the cutting-edge research interests of the School, which will ensure that you graduate, aware of the latest challenges in this rapidly advancing subject.

In addition to 40 credits of taught modules, you will join one of the School's research groups, and become a member of the Research School as you undertake a major research project (worth the remaining 80 credits). You will work closely with your project supervisor to tailor your project to your particular interests and ensure you develop those research skills that you feel will be most beneficial to you after completing your degree. Many students enjoy their research project so much that they choose to go on to study for a PhD after graduation.

**Generic skills-training**, focusing on transferable skills and employability, is embedded throughout the course and from the outset, and will ensure that you are equipped with the ICT, presentation, team-working and problem-solving skills, which are seen as crucial by employers.

**BSC or MSci?** The first two years of this MSci course are interchangeable with, and identical to, our Chemistry with Pharmacology BSc programme (**F (/undergraduate/courses/chemistry/chemistry-pharmacology-bsc.aspx) 1B2 (/undergraduate/courses/chemistry/chemistry-pharmacology-bsc.aspx)** ), which means you can delay your final choice of degree (MSci or BSc) until the end of Year 2. MSci study is dependent upon performance: you will need a 60% mark in Year 2 in order to remain on the MSci programme.

### Other options

- **Chemistry undergraduate degree courses - School of Chemistry (http://www.birmingham.ac.uk/schools/chemistry/undergraduate/undergraduate-degree-courses.aspx)**

### Related links

- **School of Chemistry undergraduate degree scholarships (http://www.birmingham.ac.uk/schools/chemistry/undergraduate/scholarships.aspx)**
- **Frequently asked questions (http://www.birmingham.ac.uk/schools/chemistry/undergraduate/faq.aspx)**

## Why study this course

Chemists at Birmingham adopt a broad, multi-disciplinary outlook to their subject, which is vital if we are to solve the problems of the 21st Century in healthcare, medicine, sustainability and the environment. Birmingham has a leading research rating and is committed to excellence in teaching: your lecturers are not only experts in their fields but also passionate about their subject and committed to inspiring you!

If you can see yourself pursuing a career in the life sciences or pharmaceutical industry, our Chemistry with Pharmacology degree programme may be for you. In addition to studying the fundamentals of chemistry, learning how therapeutic agents are used in medicine, in particular their effects and mode of action on the body (pharmacology), will equip you with interdisciplinary expertise in two core aspects of the drug discovery process.

Read more about why you should study **Chemistry at Birmingham (/schools/chemistry/undergraduate/why-chemistry-birmingham.aspx)**

## Modules

Each year contains 120 credits of taught material, delivered in modules that are typically worth 10 or 20 credits.

Core courses in Chemistry (60 credits in Years 1–3) are taken by all students enrolled on both single honours and major–minor degree programmes and cover those fundamentals of the subject that we deem are essential. These courses include a significant practical component, which not only allows you to develop your practical skills and techniques, but also to consolidate the associated theory from your lectures.

The remaining 60 credits in Years 1–3 include 40 credits of Pharmacology modules. The remaining 20 credits include optional chemistry modules, mathematics courses, laboratory modules, and courses which focus on IT and communications skills and enhancing employability.

In Year 4, you study just Chemistry and choose 40 credits of taught material from a wide selection of courses pitched at the cutting edge of the subject. A major research project accounts for the remaining 80 credits.

Detailed module descriptions are located on the **course breakdown (/schools/chemistry/undergraduate/course-modules.aspx)** page on the School of Chemistry website.

## 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)** and those offered by the **School of Chemistry (/schools/chemistry/undergraduate/scholarships.aspx)**.

## Entry requirements

**Number of A levels required:** 3

**Typical offer:** AAB

**Required subjects and grades:** Chemistry; a minimum grade B in Biology at A level or, if not taking the subject at this level, at AS level is required; one (or more) from Physics, Mathematics, and Further Mathematics is highly desirable but not essential.

**General Studies:** and Critical Thinking are not accepted.

The decision to remain on (for MSci-registered students) or transfer to (an option for BSc-registered students) an MSci programme is made at the end of Year 2 and is based on your Year 2 mark.

**International Baccalaureate Diploma:** Typical offer 35 points including Chemistry and Biology at HL. An additional science subject at HL is advantageous but not essential. A minimum of 5 in SL English and 4 in SL Maths is required for those students who do not have a minimum of grade C in English at GCSE and of grade B in Maths at GCSE.

**International students:**

Learn more about **international entry requirements (/International/students/country/index.aspx)**.

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

**Chemistry undergraduate degree courses - School of Chemistry (/schools/chemistry/undergraduate/undergraduate-degree-courses.aspx)**

**School of Chemistry undergraduate degree scholarships (/schools/chemistry/undergraduate/scholarships.aspx)**

**School of Chemistry undergraduate degrees - frequently asked questions (/schools/chemistry/undergraduate/faq.aspx)**

**School of Chemistry undergraduate brochure (pdf 3.2 MB) (/Documents/college-eps/chemistry/brochures/chemistry-undergraduate-brochure.pdf)**

## Learning and teaching

Adobe Flash Player or QuickTime is required for video playback. Get the latest Flash Player Get the latest version of QuickTime

**Personal Tutor:** At the start of your degree, you will be assigned a Personal Tutor who remains with you throughout your studies. You will meet him or her at least once a semester to review your academic progress and to discuss how to develop your transferable skills. Your personal tutor will also be able to advise on particular areas where you may need additional support. During your first year you will also undergo a formal **transition review** with your personal tutor to see how you are progressing and whether there are particular areas where you need support.

**Delivery of the course**

As a Birmingham student you are part of an academic elite and will learn from world-leading experts. 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.

Your learning will take place in a range of different settings, including **lectures, workshops and small-group tutorials, self-study** and **peer-group learning sessions** and **laboratory and project work.**

You may find these new ways of studying challenging at first; however, rest assured, we will work with you to facilitate this transition. You will have access to a comprehensive academic and pastoral support system, which includes your personal tutor and welfare tutors.

The course is delivered as lectures, tutorials, workshops and laboratory classes. In your final year, you will also complete a research-related project. In the first year, you can expect about 20 hours of contact time per week made up of approximately 12 hours of lectures, tutorials and workshops, and up to eight hours of laboratory classes.

**Small-group tutorials** run alongside our lecture courses and provide a valuable opportunity for you to discuss specific problems with your tutor, as well as consolidate and test your understanding of the lecture material through problem-solving exercises..

**Enquiry-Based Learning (EBL)** provides an environment where the learning process is driven by enquiry. In this learning approach, the lecturer acts solely as a facilitator. EBL is a particularly useful method for teaching aspects of chemistry, for example, the use of spectroscopic techniques in structure elucidation. It often requires you to work in a team to solve a problem and exemplifies the research-oriented approach to problem-solving, which lies at the heart of the research-led ethos of the University.

**Laboratory-based practical work** forms an integral part of the School's degree programmes. These classes not only develop your practical skills but also reinforce concepts introduced in the associated lectures. Practical sessions typically last four hours in your first year; however, these increase in length in subsequent years to allow for more advanced experiments.

In your final year, if you are on an MSci programme, you will undertake a major **research project**. You will join a research group and become a member of the Research School. Your project will enable you to focus on the area of Chemistry that interests you most and to carry out science that has never been done before. Projects can be synthesis-based or concentrate on more theoretical aspects of the subject or involve a combination of both; you will work closely with your project supervisor to tailor the project to your particular research interests.

If you are a BSc student, you will also complete a research-related project in your final year, which can involve practical-based research, computer-based research or a literature dissertation. If you are interested in entering the teaching profession, you may opt instead for a project in the area of chemical education.

## Assessment methods

Each module is assessed independently. Most contain a component of **continuous assessment**, which usually contributes a quarter to one-third of the module mark. Methods of assessment are tailored to best assess the **learning outcomes** of the module and can include end-of-year **examinations**, written **assignments**, **oral and poster presentations**, **computer-based tests** and/or **laboratory** and **project reports**. Some modules are assessed completely by coursework. Examinations are taken in May and June.

We provide prompt and informative **feedback** on all pieces of submitted work. Feedback comes in a variety of forms, including written comments on pieces of assessment, whole-class feedback sessions and one-on-one discussions with your tutors. In all cases, the feedback will highlight the good points as well as those areas that require more attention.

At the beginning of the year, you will be given information on how and when you will be assessed. You will receive feedback on each assessment within four weeks (and often much sooner) so that you can learn from, and build on, what you have done. You will also be given feedback on any exams that you take.

## Employability

On average, 85% of the students graduating from this course go straight into work and/or further study after graduation. Those in work were typically earning in the range £16,000-£25,000 pa six months after graduation.

As a Birmingham Chemistry graduate you will possess excellent **core skills** in numeracy, IT and literacy, as well as highly-developed problem-solving, team-working, and communication skills, all of which are deemed crucial by employers. Combining these **transferable skills** with an **in-depth**

**knowledge of Chemistry,** both theory and practice, you will enter the workplace ready to interpret complex data, to propose innovative solutions to challenging problems, and to design new molecules and materials to solve societal needs.

You might decide to pursue a career in one of the chemical, pharmaceutical or manufacturing industries; alternatively, you could choose to work in other areas of science and technology, such as environmental protection, analytical chemistry or forensics. Other areas that need the problem-solving skills you will have developed include finance, law and marketing, as well as teaching and research.

Birmingham Chemistry has strong research links with many chemical companies, which we can exploit to help you to gain industrial experience whilst studying. Whilst you may choose to undertake a Summer placement as part of your degree, our **Chemistry with Industrial Experience MSci programme (http://www.birmingham.ac.uk/students/courses/undergraduate/chemistry/chemistry-industrial.aspx)** is a more popular degree choice should you wish to gain experience of working during your degree. On this programme, you spend your third year in paid employment. Working and studying in an industrial setting provides you with valuable experience, whilst at the same time improving your career prospects.

**Matt Gray**
**MSci Chemistry with Industrial Experience**
**Placement: AstraZeneca**

A placement is not as intimidating as it first appears and if you enjoy practical work, then I can't think of a better degree to choose.

**Career destinations of previous graduates include:**

- AstraZeneca
- GlaxoSmithKline
- BASF
- Procter and Gamble
- Reckitt Benckiser
- Severn Trent Water
- Forensic Science Service
- BAE Systems

## University Careers Network

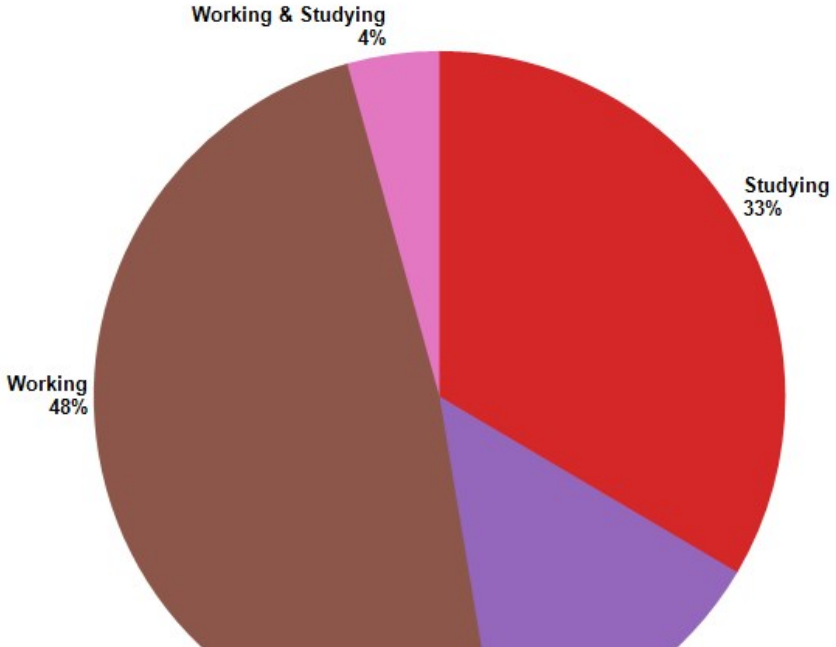
Preparing for your future career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or would rather consider the broad range of opportunities that are available to you once you have your degree, our **Careers Network (http://www.birmingham.ac.uk/students/careers/index.aspx)** are there to help you to achieve your goal.

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. 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 your extra-curricular activities and is an accredited employability programme designed to improve your career prospects.

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.




### Range of Occupations for Birmingham's Chemistry Graduates

- Accountant
- Analytical Chemist
- Analytical Engineer
- Chemical Analyst
- Development Chemist
- Assistant Commissioning Editor
- Assistant Technical Officer
- Laboratory Chemist
- Manufacturing Graduate
- Process Development Chemist

### Further study - examples of courses

- MRes Human and Environmental Health Impacts of Nanoscience and Nanotechnology
- MSc Advanced Chemical Engineering
- MSc Analytical Toxicology
- MSc Biochemical Engineering
- MSc Forensic Investigation

- Second degree in medicine
- PhD - Radiochemistry
- PhD - Cancer Sciences
- Doctor of Pharmacy
- PhD Chemistry

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

## Professional accreditation

Graduates are eligible for professional membership of the Royal Society of Chemistry

Additional accreditation **No**

MSci (Hons) Chemistry with Pharmacology
Full time

To see more details and compare with other courses

Visit UNISTATS

Official data collected by HEFCE



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