Department of Chemistry

UNDERGRADUATE BROCHURE
Entry 2016
Welcome

The department of Chemistry at Warwick is a thriving community of academics, researchers, support staff and students. By joining our department, you too will quickly share in our enthusiasm for chemistry and its applications, from medicine through to renewable energy.

You’ll be inspired by our dedicated team of academics who, as world-leading researchers, use their expertise and enthusiasm for innovation and discovery.

You can also play a part in our diverse research through our high-quality comprehensive syllabus. Expect teaching that takes the best from both modern and traditional methods. What’s unquestionably modern is our high-specification, industry-standard synthetic laboratories. You’ll also use the latest spectroscopic and analytical instrumentation, and powerful facilities for computational chemistry.

To get the most out of Warwick, you’ll also want to consider what happens beyond the department. What you’ll find is a wealth of sports, learning and entertainment facilities, including Warwick Arts Centre, the largest outside London. Warwick also has a very active Students’ Union, which provides headline entertainment and has the largest collection of University social and sports clubs in the UK.

That’s just a summary of the world of discovery awaiting you here at Warwick. You can find out more by reading this brochure or visiting our website. I look forward to meeting you soon at one of our many campus Open Days.

Professor Alison Rodger
Head of Department
“Joining the Chemistry Society is definitely something you should consider. Every week there is a Chemistry Café for you to put questions to experienced students and academics. There is also an outreach project, which involves spreading the joys of Chemistry to younger school children. Hopefully this will inspire them as well as giving you that little bit extra to add to your CV.”

Samuel Kidman
Fourth year, MChem

Choose the Department of Chemistry. What then?

Then, your fascination with chemistry would contribute to research with a reputation for breaking new ground.

Why study Chemistry at Warwick?

► You can choose from a flexible Royal Society of Chemistry accredited syllabus, leading to unlimited career opportunities and Chartered Chemistry status.
► You’d be choosing one of the world’s top Chemistry departments. We’re currently listed in the top 150 in the world (QS 2015 World University ranking) and consistently ranked in the top ten of national league tables.
► In the 2014 Research Excellence Framework 98% of our chemistry research was classed as ‘internationally excellent’ or ‘world leading’. You’ll have the chance to contribute to Warwick’s cutting-edge research during a final year project based upon a topic of your choice.
► We attract academics that are among the very best in their field and dedicated to nurturing your talent and potential. As a result you’ll continually discover fresh insights and unchartered territory whilst you study.
► As part of your 3rd year studies you could embark on an overseas placement in either Europe, Singapore or with our partners at Monash University, Melbourne.
► Recent multi-million pound investment means that you will study in world-class teaching facilities including our £24m state-of-the-art centre for materials and analytical science.
Push the limits of your curiosity

Research

New graphene based materials, synthetic cells for gene regulation, organic solar cells for portable electronics, and trailblazing developments in the fight against HIV.

These are just a handful of the breakthroughs made by our academics.

By choosing Warwick you’ll be joining a research driven community with an enviable reputation for creating new knowledge. You can play a part in that process.

We give everyone the opportunity to contribute to cutting-edge research projects, working alongside academics at the forefront of their subjects and continually making groundbreaking advances. Your practical work will be carried out in our state-of-the-art laboratory space and could be selected for publication in a chemical journal.

Cutting-edge facilities:
- Eight high-NMR spectrometers
- X-Ray diffraction equipment
- Chromatographic equipment
- Lasers
- High performance computers

Our research activity:
- Chemical biology
- Interfaces & materials
- Analytical science and instrumentation
- Synthesis and catalysis
- Theory and simulation
“Studying Chemistry at Warwick has enabled me to not only develop my knowledge and understanding of the subject, but has also given the opportunity to improve a number of other essential skills which will help me be successful in future, such as presentation, teamwork and leadership skills. What I love about the department is that no matter who you are there will always be people who will be more than happy to help you - academics, PhD students and undergraduates alike, it really is a fantastic community of people. We have a dedicated careers consultant just for Chemistry students, who runs a variety of workshops, meetings and careers events to help all of us decide what direction we would like our careers to take. I will be graduating in June this year, confident that I have been prepared for whatever life decides to throw at me!”

Sophie Thompson
Fourth year, MChem

Courses

All our BSc and MChem degrees have a common first two years.

<table>
<thead>
<tr>
<th>F100 BSc Chemistry</th>
<th>F105 MChem Chemistry</th>
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<tbody>
<tr>
<td>F121 BSc Chemistry with Medicinal Chemistry</td>
<td>F125 MChem Chemistry with Medicinal Chemistry</td>
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<td>(3 Years)</td>
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<th>Typical Offer</th>
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<tr>
<td>A level: AAB</td>
<td>A level: AAA</td>
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<tr>
<td>IB: 36 points</td>
<td>IB: 38 points</td>
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3 A level subjects including Chemistry and Mathematics
At least 6 in higher level Chemistry and at least 5 in higher level Mathematics
3 A Level subjects including Chemistry and Mathematics
At least 6 in higher level Chemistry and at least 6 in Higher Level Mathematics.

The Chemistry degrees will provide you with training across all areas of Chemistry. On top of a solid grounding in key areas, there is flexibility later in the course for you to tailor your module options to your own interests. If you’re inclined towards further study, our MChem degree opens up opportunities for a high-level research career.

The Chemistry with Medicinal Chemistry degrees will provide you with an excellent foundation in medicinal chemistry. You will explore the process of medicinal drug discovery, starting from the initial concept of a new product, to the discovery stage, through clinical trials, scale-up and finally production. Once again, if you’re inclined towards further study, our MChem degree opens up opportunities for a high-level research career.
How will I learn?

**Year 1 & 2**

A combination of about ten lectures, one tutorial, one workshop and 1-2 days per week in the laboratory.

Your first and second years will develop your understanding of core areas including some medicinal chemistry where you’ll benefit from strong research-led teaching. Classes in our state of the art undergraduate labs will form an integral part of your learning.

**Year 3**

Terms 1 and 2 - A combination of lectures, tutorials and workshops
Term 3 - Lab work. Either extended labs at Warwick or a placement either overseas or within industry.

Final-year BSc students can choose optional advanced Chemistry modules or modules from other science or language departments. You’ll also have the opportunity to embark on an extended lab or industrial or overseas placement.

**Year 4**

Research project orientated, supported by optional lecture modules. In your final year you will complete an individual project on a topic of your choice. This is worth 50% of the year’s mark and takes place in collaboration with one of our academics.

For students on the Chemistry with Medicinal Chemistry degree streams, guest lecturers, mainly from the pharmaceutical industry, will provide expertise and knowledge and in your final year you will have the flexibility to select from advanced topics in Chemistry or Life Sciences.

We encourage our students to take part in the Undergraduate Research Support Scheme, which involves undertaking cutting edge research, during vacations.
How will I be assessed?

In the first two years of your degree, there will be on average 10 hours of continually assessed lab work per week, counting for around 25% of your year mark, other material is assessed by a combination of marked assignments and unseen exams. The year 3 lab work or placement also counts for around 25% of that year’s mark, again other material is assessed by a combination of marked assignments and unseen exams.

For MChem students, the research project counts for 50% of the 4th year (assessed by a combination of a written report, oral interview and presentation) with the optional modules (assessed by a combination of presentations, written work and unseen exams) making up the final 50% of that year.

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<th>Year 1:</th>
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<th>Year 3:</th>
<th>Year 4:</th>
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<tbody>
<tr>
<td>Mathematics &amp; Physics</td>
<td>Laboratory</td>
<td>Organic Chemistry &amp; Laboratory</td>
<td>Research Project &amp; Methodology</td>
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<tr>
<td>Inorganic Chemistry</td>
<td>Polymer Chemistry</td>
<td>Inorganic Chemistry &amp; Laboratory</td>
<td>Optional Modules:</td>
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<td>Organic Synthesis</td>
<td>Physical Chemistry</td>
<td>Synthetic Chemistry I (Organic)</td>
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<td>Electrochemistry &amp; Properties of Solutions</td>
<td>Statistical Mechanics</td>
<td>Synthetic Chemistry II (Metallo-organic)</td>
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<td>Symmetry &amp; Group Theory</td>
<td>Synthetic Chemistry III (Macromolecular)</td>
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<td>Transition Metal Chemistry</td>
<td>Electrochemistry &amp; Nanotechnology</td>
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<td>Medicinal &amp; Biological Chemistry</td>
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<td>Theoretical &amp; Computational Chemistry</td>
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<td>Chemical Biology</td>
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Optional Modules:
- Molecular Structure & Dynamics
- Bioorganic Chemistry

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<td>Optional Modules:</td>
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<td>Business Studies*</td>
<td>Extended Lab**</td>
<td>Synthetic Chemistry I (Organic)</td>
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<tr>
<td>Polymer &amp; Colloid Science</td>
<td>Coordination &amp; Bio-Inorganic Chemistry</td>
<td>Synthetic Chemistry II (Metallo-organic)</td>
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<td>Energy</td>
<td></td>
<td>Synthetic Chemistry III (Macromolecular)</td>
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<tr>
<td>Communicating Science</td>
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<td>Electrochemistry &amp; Nanotechnology</td>
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* BSc only  **Compulsory for MChem  †Options from other departments available
Furthering your horizons

Placements abroad and in industry

We strongly believe that new experiences, which stem from beyond the classroom, are a powerful catalyst to personal growth.

During your third year of either an MChem or BSc degree you can embark on a 3-6 month placement with a prestigious global organization or one of our international university partners. We have strong links with UK and overseas industry and will assist you in finding the placement most suitable to you and your interests.

You can select an overseas placement with one of the following:

► European University (Erasmus Programme) - Barcelona, Modena, Toulouse, Eindhoven, Gothenburg, Vienna, Lille
► Global Industry e.g. BASF, DSM, Janssen
► An international University Partner - Monash, Melbourne NTU, Singapore UTAS, Tasmania

Alternatively, if you choose to study our MChem degree you can undertake a 12 month industrial placement that’s fully integrated into your course. Our placement providers include:

► GlaxoSmithKline
► Unilever
► AstraZeneca
► AKZO Nobel
► Syngenta.
“The best thing about my degree has been my academic placement to Barcelona in my third year. It was great because I got hands on experience of real life research and doing things that are novel and really contribute to something is such a fulfilling feeling. I was certain from my first week of my placement that I wanted to carry on to do a PhD and it’s such a great way of finding out what you want to do. The experience of living in a different country, working in a new environment, experiencing new cultures was completely invaluable. I would 100% recommend it.”

Jack Pike
Fourth year, MChem
“I went to Singapore in term 3 of my third year to do a research project. I was working with inorganic frameworks making phosphorus and nitrogen compounds and seeing what they could be used for. It was interesting to experience not only a new culture and a new country but to experience what labs are like there as well as pushing yourself out of your comfort zone and to see what you can do.

The fourth year MChem project is great because you’re doing something that has never been done before and you don’t actually know the answer so anything can happen and it’s always new. You’re treated a bit more as a grown-up as you’ve got the skills already so they give you a problem and see if you can do it. I still had lots of assistance during my project, my supervisor was really supportive and the PhD students and postdocs in the groups were really helpful as well.”

Natasha Boulding
Fourth year, MChem
Where could your course take you?

**Careers**
Studying at Warwick means that as a graduate you’ll be highly employable. Warwick is currently ranked 3rd in the UK and 15th in the world for our reputation with employers and that’s reflected in the high quality job roles offered to our Chemistry graduates. Recent graduates have gone on to careers within Research and Development Chemistry, Corporate Financial Analytics, Pharmaceutical Medicine and Inorganic Analytics. Others have chosen to pursue postgraduate studies in the UK and abroad.

**What makes our Chemistry graduates so employable?**
Our partnerships with industry and universities worldwide provides exclusive opportunities over the course of your degree that will increase your employability when you leave Warwick (see pg 8). Our courses are also accredited by The Royal Society of Chemistry. This is a guarantee that you’ll have the right breadth and knowledge for an array of science-related occupations including those in the pharmaceutical area.

**Beyond study**
We’ll equip you with valuable skills that are desirable to any workplace such as critical thinking, presentation, communication, management, business skills, research and leadership. This will empower you to either specialise in a science-related career or branch out to different career horizons, should you choose to.

Employers will also be impressed if you’ve been a member of one of our many student-run clubs or societies. This will give you the chance to meet a broad mix of people and build your skills and confidence. You can join the ChemSoc, choose from numerous extra-curricular interest groups or give back to the local community by taking part in our department’s school outreach programme for both primary and secondary pupils.
What can I do with a Degree in Chemistry?

Examples of 2014 graduate destinations include:

- Patent Attorney
- Forensic Analyst
- Research and Development Scientist
- Assurance Associate
- Technical Sales Consultant
- Business Development Manager
- Accountancy
- Inorganic Materials Specialist
- Pharmaceutical Engineer
- Chemist

Employers our graduates are now working for include:

- Akzo Nobel
- Unilever
- PriceWaterhouseCoopers
- KPMG
- Kraft
- EDF Energy
- Macdermia
- Baker Tilly
- GSK

91.4% of all 2012/13 Chemistry graduates were in work six months after graduation.

3rd most targeted university nationally by the UK’s top 100 graduate employers.

8,330 Student work experience opportunities available on campus.

The Graduate Market in 2015, High Flier
Where are they now?

2013 Chemistry Graduates

- PhD: 26%
- MSc: 8%
- PGCE/teaching: 11%
- Medicine/health service: 8%
- Chemical Industry: 19%
- Finance/Law/Marketing: 16%
- Travel/other: 6%
- Still Seeking: 6%

2012 Chemistry Graduates

- PhD: 30%
- MSc: 12%
- Chemical Industry: 14%
- Medicine & related: 4%
- Teaching: 12%
- Other qualifications: 2%
- Finance/Law/Marketing: 18%
- Other roles: 5%
- Still Seeking: 3%

2011 Chemistry Graduates

- PhD: 24%
- MSc: 12%
- Chemical Industry: 14%
- Medicine & related: 5%
- Teaching: 10%
- Other roles: 2%
- Finance/Law/Marketing: 22%
- Other roles: 4%
- Still Seeking: 7%
What Next?

Open Days

Warwick Open Days take place several times a year. These offer you a good opportunity to tour the campus and experience what it is like to be a student at a world leading university.

Visit warwick.ac.uk/study/undergraduates/visits/opendays for dates and further details.

Admission Days

Once you have applied, why not experience Warwick life first-hand? Visit us for a day and explore where you might be spending the next three to four years. We will show you the department, our laboratories, the main campus grounds, our student union, sports centre and residences. We’ll introduce you to some of our students so that you can listen to their experience of campus life. The day will also involve meeting our academic staff - they’ll be more than happy to answer your questions and tell you more about the courses.

“I actually didn’t plan on coming to Warwick, I came to the open day because my friend was and I thought that was a great reason to come out of school. In the introductory talk the head of department emphasised the student and how the university had to be right for them. When I heard it I thought it was generic and untrue, but the course really is heavily focused around undergraduates; much more than I thought it would be, especially relative to my friends at other universities. I like the personal touch and studying Chemistry at Warwick gives you opportunities which I wouldn’t have been offered elsewhere. For example, I did a summer research project after my first year, which was a rare opportunity to gain first hand research experience, especially for undergraduates.”

Andrew Heard
Second year, MChem