

# F100: Chemistry



Undergraduate BSc 2021

## Essentials

**Please note:** 2020-21 courses may be affected by Covid-19 and are therefore subject to change due to the ongoing impact of Covid-19. Summaries of course-specific changes resulting from the impact of Covid-19 will be provided to applicants during August 2020.

For the latest information on our plans for teaching in academic year 2020/21 in light of Covid-19, please see [www.durham.ac.uk/coronavirus](http://www.durham.ac.uk/coronavirus)

<b>UCAS code</b>	F100
<b>Degree</b>	BSc
<b>Mode of study</b>	Full Time
<b>Duration</b>	3 years
<b>Location</b>	Durham City ( <a href="http://www.durham.ac.uk/study/location/durham.city">www.durham.ac.uk/study/location/durham.city</a> )
<b>A-Level</b>	A*AA
<b>BTEC</b>	D*DD
<b>International Baccalaureate</b>	38
<b>Alternative qualifications</b>	<ul style="list-style-type: none"> <li>• Other UK qualifications (<a href="http://www.dur.ac.uk/resources/undergraduate/apply/UK.pdf">www.dur.ac.uk/resources/undergraduate/apply/UK.pdf</a>)</li> <li>• EU qualifications (<a href="http://www.dur.ac.uk/resources/undergraduate/apply/EU.pdf">www.dur.ac.uk/resources/undergraduate/apply/EU.pdf</a>)</li> <li>• International qualifications (<a href="http://www.dur.ac.uk/international/country.information/">www.dur.ac.uk/international/country.information/</a>)</li> </ul>
<b>Contextual Offers</b>	You may be eligible for an offer which is one or two grades lower than our standard entry requirements. Find out more ( <a href="http://www.durham.ac.uk/study/ug/apply/contextualoffers/">www.durham.ac.uk/study/ug/apply/contextualoffers/</a> ).
<b>More information</b>	Still have questions? ( <a href="http://www.durham.ac.uk/study/askus/">www.durham.ac.uk/study/askus/</a> )
<b>Department(s) Website</b>	<a href="http://www.durham.ac.uk/chemistry">www.durham.ac.uk/chemistry</a>

## Course Summary

### Description

You will spend three years developing an understanding of a broad range of modern chemistry covering organic and inorganic synthesis, physical characterisation methods, and chemistry at the interfaces with biosciences, engineering and physics. You will also gain a broad range of practical skills in synthesis, physical measurement and data analysis. In your third year you will have an opportunity to demonstrate the research skills you have developed. Throughout the degree you will develop your chemical understanding, problem-solving and practical skills, whilst learning how to learn. Graduates of this degree are well-prepared for Masters level study, work in the chemicals sector, and roles requiring problem-solving and numeracy skills.

### Year 1

You will study 120 credits per academic year. In the first year, there are 80 credits of chemistry modules that teach you the basics of inorganic, organic and physical chemistry, consolidating and building on pre-university courses. Mathematical and Experimental Tools Required in Chemistry (METRIC) contains courses that develop mathematical and physical concepts as tools for chemistry, and also some background biology and physics. Practical Chemistry is introduced in two cross-disciplinary modules, concluding in a short project.

#### Compulsory modules:

- Core Chemistry 1
- Practical Chemistry 1A
- Mathematical and Experimental Tools Required in Chemistry
- Introduction to Materials Chemistry
- Practical Chemistry 1B.

#### Examples of optional modules:

You will take 40 credits of modules from those offered by other departments in science and the other faculties. Optional modules have previously included:

- Mathematics
- Biology and languages are popular
- We offer an elective Chemistry module 'Molecules in Action'.

### Year 2

You will study compulsory modules to the value of 100 credits. These extend your knowledge of inorganic, organic, physical and theoretical chemistry from the first-year introduction, and develop further practical skills.

#### Compulsory modules:

- Core Chemistry 2
- Chemistry of the Elements

- Structure and Reactivity in Organic Chemistry
- Properties of Molecules
- Practical Chemistry 2– Inorganic
- Practical Chemistry 2 – Organic
- Practical Chemistry 2 – Physical.

**Optional modules:**

Your final second-year modules provide you with an opportunity to specialise or to continue to study with a timetable-compatible module of another subject. You will study one 20-credit module. Option modules have previously included:

- Biological Chemistry
- Computational Chemistry
- A module from another subject.

**Year 3**

Three compulsory modules ensure that you cover some core aspects of the subject, and also provides you with a research-led project. The remaining modules allow you to study all areas of the subject or to specialise.

**Compulsory modules:**

- Core Chemistry 3
- Chemistry BSc Dissertation
- Either Chemistry and Society Or Chemistry into Schools.

**At least one 10-credit module:**

- Inorganic Concepts and Applications
- Advanced Organic Chemistry
- Molecules and their Interactions.

**At least one 10-credit laboratory module:**

- Practical Chemistry 3 – Inorganic
- Practical Chemistry 3 – Organic
- Practical Chemistry 3 – Physical.

**Optional modules:**

These 20-credit modules provide you with the opportunity to further develop your interest in specialised areas of the subject. Modules have previously included:

- Advanced Biological Chemistry (if Biological Chemistry was taken in the second year)
- Computational Chemistry (if not taken in the second year)
- Materials Chemistry

- Advanced Computational Chemistry.

We review course structures and core content (in light of e.g. external and student feedback) every year, and will publish finalised core requirements for 2021 entry from September 2020.

### **Placement Year**

You may be able to take a work placement. Find out more ([www.durham.ac.uk/placements/](http://www.durham.ac.uk/placements/)).

## Admissions Process

### Subject requirements, level and grade

**A level offer – A\*AA** including Chemistry and Mathematics.

**BTEC Level 3 National Extended Diploma/OCR Cambridge Technical Extended Diploma – D\*DD** and A level requirements as above.

**IB Diploma score – 38** with 666 in higher level subjects, including Chemistry and Mathematics (either Analysis and approaches HL or Applications and interpretations HL).

In addition to satisfying the University's general entry requirements, please note:

- We welcome applications from those with other qualifications equivalent to our standard entry requirements and from mature students with non-standard qualifications or who may have had a break in their study. For more information contact our Admissions Selectors.
- If you are an international student who does not meet the requirements for direct entry to this degree, you may be eligible to take an International Foundation Year pathway programme at the Durham University International Study Centre ([www.durhamisc.com/?ch=uniweb&cc=signposting&cid=uniweb&utm\\_source=signposting&utm\\_medium=signposting&utm\\_campaign=uniweb](http://www.durhamisc.com/?ch=uniweb&cc=signposting&cid=uniweb&utm_source=signposting&utm_medium=signposting&utm_campaign=uniweb))
- We are pleased to consider applications for deferred entry, but encourage a short statement of gap year plans in your personal statement.

### Science A levels

Applicants taking Science A levels that include a practical component will be required to take and pass this as a condition of entry. This applies only to applicants sitting A levels with an English examination board.

### English Language requirements

Please check requirements for your subject and level of study ([www.durham.ac.uk/learningandteaching.handbook/1/3/3/](http://www.durham.ac.uk/learningandteaching.handbook/1/3/3/))

### How to apply

[www.durham.ac.uk/undergraduate/apply](http://www.durham.ac.uk/undergraduate/apply)

### Information relevant to your country

[www.durham.ac.uk/international/country.information/](http://www.durham.ac.uk/international/country.information/)

## Fees and Funding

### Full Time Fees

<b>EU Student</b>	£27,350.00 per year
<b>Home Student</b>	£9,250.00 per year
<b>Island Student</b>	£9,250.00 per year
<b>International non-EU Student</b>	£27,350.00 per year

The tuition fees shown for **home** students are for one complete academic year of full time study and are set according to the academic year of entry. Fees for subsequent years of your course may rise in line with an inflationary uplift as determined by the government.

The tuition fees shown for **overseas and EU** students are for one complete academic year of full time study, are set according to the academic year of entry, and remain the same throughout the duration of the programme for that cohort (**unless otherwise stated**).

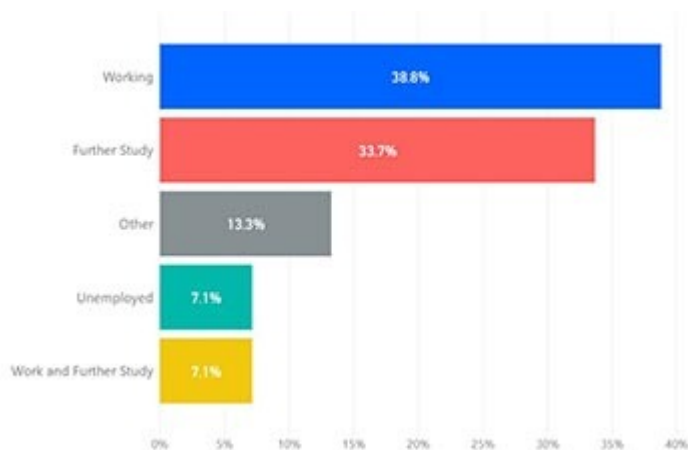
Please also check costs for colleges and accommodation ([www.durham.ac.uk/undergraduate/accommodation/costs/](http://www.durham.ac.uk/undergraduate/accommodation/costs/)).

### Scholarships and funding

[www.durham.ac.uk/undergraduate/finance](http://www.durham.ac.uk/undergraduate/finance)

## Career Opportunities

### Chemistry



### Of students that left in 2017:

- **80%** are in employment or further study

### Of those in employment:

- **89%** are in graduate level employment
- Median salary £24,500

(Source: Destinations of Leavers from Higher Education (DLHE) survey of 2016/17 graduates. The DLHE survey asks leavers from higher education what they are doing six months after graduation. Full definitions for the DLHE Record can be found here: [www.hesa.ac.uk/support/definitions/destinations](http://www.hesa.ac.uk/support/definitions/destinations))

Examples of high profile recent employers include GSK, Infineum, Institute of Cancer Research, Proctor and Gamble, BP and Akzo Nobel.

A significant number of students progress onto higher level study following their degree in Chemistry, notably at Durham but also other prestigious institutions including Oxford, Kings College London, Edinburgh, Cambridge, Nottingham and Manchester.



## Preparing you for a career

Throughout your chemistry degree we will help you acquire key skills that are essential to you in your future studies and career, such as:

- Communication and presentation
- Logical thinking
- Report writing
- Problem solving
- Time management
- Data handling and analysis
- Team work and leadership
- Creativity
- Interpersonal skills
- Instrumental and experimental

These skills will enable you to pursue a range of different careers.



## Careers for a lifetime

A chemistry degree will prepare you for a career in chemistry either in industry, research or academia and will lead to a wide range of career opportunities including:



- Archaeology
- Biotechnology
- Drug discovery
- Environmental science
- Food technology
- Forensics
- Innovation technology
- Marine chemistry
- Nanotechnology
- Sport development
- Sustainability
- Teaching



Chemistry is also excellent training for careers in:

- Business and finance
- Central and local government
- Consultancy
- Journalism
- Information technology
- Law
- Patent Law
- Publishing
- Sales and marketing

And much more.....

**It pays to do Chemistry**

According to independent research, the average chemistry graduate earns substantially more over a lifetime than graduates of many other disciplines:

- £60,000 more than most other graduates
- £190,000 more than those with no degree

## Employment development opportunities

The Careers, Employability and Enterprise Centre ([www.durham.ac.uk/careers/](http://www.durham.ac.uk/careers/)) works closely with the department in facilitating student access to job and work experience opportunities, careers and employability events, employer workshops and presentations, skills programmes and tailored individual careers guidance.

The department delivers a number of events in partnership with the Careers, Employability and Enterprise Centre including mock interviews for year in industry students, careers presentations and a chemistry careers evening.

## Professional endorsement and recognition

Our M.Chem. and B.Sc. degrees in Chemistry are accredited to the Royal Society of Chemistry. See accreditation ([www.dur.ac.uk/chemistry/undergraduate/undergraduate\\_courses/accreditation/](http://www.dur.ac.uk/chemistry/undergraduate/undergraduate_courses/accreditation/)) for further details.

## Opportunities for summer placements

Through our extensive contacts with industry we can help you obtain industrial experience by working with a chemical company in the summer vacation.

During the summer vacation undergraduates can also obtain research bursaries ([www.dur.ac.uk/chemistry/chemistry\\_summer\\_bursaries/](http://www.dur.ac.uk/chemistry/chemistry_summer_bursaries/)) enabling work experience within a research group in the Department or overseas. These include the "Tanner Research Internship" scheme and bursaries funded by the sale of a successful Departmental spin out.

## Meet potential employers

The University, colleges and Department all host a variety of careers events where you can meet potential employers. For example, the Chemistry Department holds a regular CV workshop where industry and other employers will discuss your CV with you, and give you advice on how to present yourself when applying for jobs.

Our 4th year students undertaking a research project in Durham have the opportunity to take part in a business game run by personnel from industry or visit a local chemical company. We also run a 'perspectives from industry' course in which senior industrial chemists from a variety of organisations give lectures illustrating the interplay of research and development, technology and economics.

## **Open days and visits**

### **Pre-application open day**

Pre-application open days are the best way to discover all you need to know about Durham University. With representatives from all relevant academic and support service departments, and opportunities to explore college options, the open days provide our prospective undergraduates with the full experience of Durham University.

Please see the following page for further details and information on how to book a place:  
[www.durham.ac.uk/opendays](http://www.durham.ac.uk/opendays)

### **Discover Durham Tours**

Discover Durham tours offer a brief introduction to the University. The tour begins at one of our undergraduate colleges, where you will receive an introductory talk from a member of college staff, followed by a tour of the college by current students.

[www.durham.ac.uk/undergraduate/live/visit/discoverdurham](http://www.durham.ac.uk/undergraduate/live/visit/discoverdurham)

### **Overseas Visit Schedule**

[www.durham.ac.uk/international/office/meetus](http://www.durham.ac.uk/international/office/meetus)

## Department Information

### Chemistry

#### Overview

Chemistry is a linear, quantitative subject, containing a significant volume of factual material. It is an experimental science, where development of practical skills is important. From a coherent and integrated core of theoretical and practical knowledge, you will progress to more specialised material. Our academic staff include internationally renowned academics with a wide range of expertise. In addition to developing your practical skills, they will help you to establish problem-solving, team-working, communication and leadership abilities, while you take responsibility for your own learning.

#### Rankings

- World Top 100 in the *QS World University Subject Rankings 2020*.
- 3rd in *The Complete University Guide 2020*.
- 5th in *The Times and Sunday Times Good University Guide 2020*.

#### Staff

For a current list of staff, please see the Chemistry Department web pages ([www.dur.ac.uk/chemistry/staff/](http://www.dur.ac.uk/chemistry/staff/)).

#### Facilities

We have superb facilities for undergraduate teaching, including three new or refurbished teaching laboratories equipped with a wide range of modern instrumentation. During your first three years you will be trained in modern synthetic methods for molecular and solid-state chemistry and be introduced to the more advanced research instrumentation, such as NMR and mass spectrometry. The fundamentals of computational methods in chemistry will also be introduced, using state-of-the-art software.

In your fourth-year Research Project you will work in one of our research laboratories, with access to a comprehensive range of instrumentation, spectrometers, diffractometers and analytical services.

#### Website

[www.durham.ac.uk/chemistry](http://www.durham.ac.uk/chemistry)

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