Chemistry

MINIMUM A-LEVEL GRADE REQUIREMENTS

A*A*A (Both the A*s should be in Science or Mathematics)

A-LEVELS REQUIRED

Chemistry and Mathematics (FM & another science recommended)

LENGTH OF COURSE

4 years

ADMISSIONS TEST

None! As of 2021, candidates no longer have to do the Thinking Skills Assessment: Section 1 (TSA S1 Chemistry)

COURSE DESCRIPTION

Chemistry is a wide-ranging science concerned with matter at the atomic and molecular scale. Important aspects are synthesis, structure, reaction mechanisms, properties, analysis and transformations of all types of materials. Aspects of maths, physics and biology are all covered from a chemical perspective as well as the fundamentals of chemistry itself. Chemistry at Oxford is a four-year course leading to the degree of MChem (with honours). The key features are: A very broadly based first year course designed to provide a solid foundation for the subsequent three years. In addition to the traditional areas of Chemistry, it includes coverage of Biological Chemistry, the Physical Basis of Chemistry and Mathematics for Chemistry. The second year covers much of the core material for the Chemistry course with opportunities to diversify into other areas via optional supplementary subjects. The third year continues coverage of core material but also offers a choice of more specialised Options which cover a wide range of topics, some relating to research interests in the Department. The practical course is an integral part of the first three years. The fourth year is spent entirely on a research project, working with a supervisor chosen by the student. One of the great things about the Oxford Chemistry course is that the first three years are like a cohesive unit. So, by the time you enter third year, students are quite well-versed with the structure of the course, lectures, labs, etc.

STRUCTURE OF MODULES

1st year

Four courses are taken: Inorganic chemistry; Physical chemistry; Organic chemistry; Mathematics for chemistry.

2nd year

Core material, including courses on: Theoretical chemistry; Biological chemistry; Inorganic chemistry; Molecular spectroscopy; Synthetic chemistry

3rd year

Further core material, plus advanced courses with a choice from a wide variety of options.

4th year

Full-time research under the supervision of a member of the academic staff.

Optional supplementary subject course can be taken in years 2 – 4.

APPROXIMATE NO. OF CONTACT HOURS PER WEEK

Tutorials: 3 - 5 hours
Lectures: 10 hours
Labs: 12 hours

WHY CHEMISTRY?

Consider chemistry if you feel competent in the subject and you are interested in understanding the real-life applications of the chemical principles you have learnt. The course is quite broad and elaborates further upon the topics you have learnt at chemistry A-level, with an added emphasis on the application of this knowledge during practicals and lectures. The course is quite broad initially, but there are many opportunities to specialise later on.

TUTORIAL TESTIMONIAL

Tutorials are organised by your college, when a tutor normally meets with two students for at least an hour per week. This enables the tutor to check that each student understands the work that has been set, and to tailor the pace and the material to the needs and abilities of individual students. Some tutors link their tutorials tightly to the current lecture courses (held in the University departments), while others choose to proceed largely independently of departmental teaching; some require their students to write essays, others to do worked examples of problems (or both), depending on the topic. Every student has at least three tutors during each academic year (one in each of the main branches of Chemistry). In addition to tutorials, College tutors also commonly provide classes – that is, teaching in groups of 4-8 students for appropriate topics, such as revision.

LABS TESTIMONIAL

There are 2 afternoons of lab work per week for which pre and post lab work is carried out. The aim of the practical course is to train students to solve problems practically, accurately, safely and efficiently, so that by the end of the course they are ready to work as a professional chemist in a research laboratory. The practical course teaches the essential experimental skills, from the synthesis and characterisation of compounds to the operation of spectrometers and other instruments for physicochemical and analytical measurements. It also makes tangible much that is covered in lectures and tutorials. There are also practicals concerning computer applications and chemistry software packages (such as structure drawing and molecular modelling) in the IT centre.

PERSONAL STATEMENT TIPS

- There is the possibility that your personal statement will be the focus of the interview or at least guide the direction of the interview hence its construction is essential. Make sure you have a clear idea of what you want to include before writing it out
- Ensure that you convey your enthusiasm to study chemistry as well as your academic ability to do so
- Tell a story that will resonate with the reader, show your personality and interests as you are more than just an aspiring chemist. Everyone's journey to studying chemistry is different therefore you should not be afraid to stand out and emphasise your strengths
- Ensure that you proof-read your personal statement to check for any spelling or grammatical errors
- Try not to make it too cliché or complex

CAREER PROSPECTS

Chemists are a constant source of innovation: it is hard to imagine any product introduced in recent times that did not require the creative efforts of a chemist. Chemistry underpins the conceptual framework and methodology of biochemistry and molecular medicine and is at the heart of many major industries. A large majority of people tend to go onto complete doctorates and then pursue a career in research. Others tend to go work in labs in either the energy, clinical or pharmaceutical industry Some decide not to pursue chemistry afterwards and go on to work in banking or consultancy and management as a chemistry degree provides you with transferable numerical and analytical skills as well as chemical.

INTERVIEW TIPS

- In terms of interviews, expect to do two to three interviews. Two of these will be at the college you applied to (or allocated for open applications) and at least one other at a college that you are randomly assigned. The pooling at interview stage is done in order to give the applicant the best chance of being accepted into Oxford even if it was not their first choice college. This is common especially when a college has more applications than normal
- One interview should be more physical chemistry/maths based, while the other will be more organic/inorganic based
- Before your interview try not to stress over any extra reading and instead make sure that you are up to date and comfortable with all of your A-Level/IB chemistry content
- If you have mentioned a book in your personal statement, make sure you revisit the book before your interview as you may be questioned on it
- If your interviewer asks you a question you did not understand, you can ask for them to repeat the question or rephrase it. They would rather you ask than continue talking about something completely irrelevant
- Ensure you take your time when answering questions. They want to see your thought process and how much you know as opposed to how fast you can answer a question
- Try to be confident and most important of all, make sure you show your enthusiasm for chemistry!

ONE THING I WISH I KNEW WHEN I WAS APPLYING

Try to enjoy the interview experience as it's a taste of life at Oxford.

Example Timetable

	Monday	Tuesday	Wednesday	Thursday	Friday
9am	**Organic** Core Carbonyl Chemistry Prof. J. Robertson *PTCL*	**Inorganic** Molecular Shapes, Symmetry and Molecular Orbital Theory Prof. L.J. Smith *ICL*	**Organic** Core Carbonyl Chemistry Prof. J. Robertson *DP*	**Organic** Substitution and Elimination at Saturated Carbons Prof. B.G. Davis *PTCL*	**Organic** Substitution and Elimination at Saturated Carbons Prof. B.G. Davis *ICL*
10am	**Maths** Vector Algebra and Determinants Dr. B. Heazlewood *DP*	**Maths** Vector Algebra and Determinants Dr. B. Heazlewood *PTCL*	**Inorganic** Molecular Shapes, Symmetry and Molecular Orbital Theory Prof. L.J. Smith *ICL*	**Organic** Substitution and Elimination at Saturated Carbons Prof. B.G. Davis *DP*	**Physical** Electrochemistry Prof. R.G. Compton *PTCL*
11am	**Organic Labs**	**Organic Labs**	**11.15 – 12.00** **Maths tutorial**	**1.00 – 2.30** **Inorganic tutorial**	**1.00 – 2.00** **Inorganic class**
5 PM	No lecture	No lecture	No lecture	No lecture	No lecture

RECOMMENDED READING/VIEWING

- **"New scientist"** (Magazine): It is an excellent way to increase your chemical knowledge but also allows you to develop knowledge of the other sciences which in turn will help you to understand Chemistry even better
- **"50 Chemistry ideas you really need to know"** (Book) – the title of the book says all and it's a really fun read.
- **"Why Chemical Reactions Happen"** (Book)– The book covers ideas from entropy to atomic and molecular orbitals to kinetics and energetics. The diagrams and tales in the book are well annotated and easy to understand. An excellent read for beginning to understand more complex chemical concepts.
- **"The Secret Life of the Periodic Table"** - by Dr Ben Still (Book)- – it's a fun read, with loads of astonishing fun facts about all the elements and a simple overview of quantum mechanics.
- **Future Learn** (Website)- This is an amazing website with plenty of free courses on topics like atmospheric chemistry, medicinal chemistry, etc. The courses are great to complete to mention in personal statements as well as general expansion of knowledge in terms of the applications of chemistry.
- **"NileRed", "NileBlue", "Periodic Videos"** – YouTube channels. These channels have really cool and sometimes whacky 10-15-minute videos in which fascinating chemical experiments are carried out.