



## A level Chemistry

### Who is this course for?

Chemistry is an excellent preparation for students looking to extend their understanding of a key physical science. It is a central science which opens up the possibility of a huge range of science related university courses and jobs. These includes medicine and health related professions such as dentistry, pharmacy and veterinary sciences etc., as well as chemical engineering, optometry and courses that overlap with maths and physics.

A level Chemistry blends particularly well with other science subjects such as physics and biology. Some students also take it as a complementary course alongside their other choices. If you are interested in how things work and why materials behave as they do then Chemistry is for you.

### What are the entry criteria?

Most of our students starting A level Chemistry have achieved B grades or better in many of their GCSEs, particularly in Science, Maths and English. In practice this means that you will be expected to have an average of 5.5 from your GCSEs in order to start the course.

### The Chemistry department at Wyke Sixth Form College

We have two specialist laboratories: both are equipped with fume cupboards and interactive whiteboards and the sort of glassware and equipment that you would expect to find in new, purpose built, laboratories. The course will develop your practical skills. These are an essential, and an assessed, part of the course. There is also a well-equipped central computer area that is shared across the science department.

You will be helped in your studies by a team of experienced teaching staff who have many successful years of experience of A level teaching, and a technician team who know how to handle the demands of practical work.

The Chemistry staff team consists of

- ✿ Dr Ian Taylor (Head of Chemistry)
- ✿ Joy Myers (Chemistry teacher)
- ✿ Ann Johnson (Chemistry teacher and tutor)
- ✿ Jeanette Kitteringham (Senior technician)

### Exam Board: AQA

The complete specification, together with past exam papers, can be seen on the AQA website. [www.aqa.org.uk](http://www.aqa.org.uk). The notes below summarise the 6 units in the A level specification.

## Course Details

### AS (Y12)

#### CHEM1 Foundation Chemistry: Autumn term

- **Atomic structure:** *Fundamental particles, isotopes, mass spectroscopy, electron arrangements,*
- **Bonding:** *ionic, covalent, metallic. Polar bonds, Van der Waals forces, Shapes of molecules.*
- **Amount of Substance:** *the mole concept, calculations about gases, solutions and solids, empirical formula, the use of balanced equations, titrations.*
- **Periodicity:** *the blocks in the Periodic table, the trends in properties of the elements across Period 3.*
- **Organic Chemistry:** *organic formulae & nomenclature, homologous series, structural isomerism.*

**Jan CHEM 1 exam:** 70 raw marks/100 UMS.

- 4 – 6 short answer questions plus 1 – 2 longer structured question(s).
- 1 hour 15 minutes 33% of the total AS marks

#### CHEM 2 Chemistry in Action: Spring term

- **Energetics:** *enthalpy changes, Hess's law, Bond enthalpies.*
- **Kinetics:** *collision theory and rate of reaction.*
- **Equilibria:** *qualitative equilibria, Le Chatelier's principle.*
- **Redox Reactions:** *Oxidation and reduction.*
- **The Halogens:** *their properties and reactions.*

**Jun CHEM 2 exam:** 100 raw marks/140 UMS

- 6 – 8 short answer questions plus 2 longer structured questions 1¾ hour exam
- 47% of the total AS marks

**CHEM 3. Investigative and Practical Skills** these are assessed throughout the year (and in the spring term in an assessed practical and test, 20% of the total AS marks).

### A2 (Y13)

#### CHEM 4 Kinetics, Equilibria and Organic Chemistry: Autumn term

- **Kinetics:** Simple rate equations Determination of rate equation
- **Equilibria:** finding the Equilibrium constant  $K_c$  and related calculations.
- **Acids and Bases:** strong and weak acids, the theory and calculation of pH, pH curves, the theory and use of buffers.
- **Organic chemistry:** isomerism (stereoisomerism- geometric and optical), Carbonyl compounds, carboxylic acids, esters, acylation, aromatic chemistry, amines, amino acids, polymers, organic synthesis, nmr, infrared & mass spectroscopy.

**Jan CHEM 4 exam:** 100 raw marks/120 UMS.

- 6 – 8 short answer questions plus 2 structured questions. Some of the questions will have synoptic elements
- 1 ¾ hours 20% of the total A-level marks

#### CHEM 5: Energetics, Redox and Inorganic Chemistry: Spring term

- **Thermodynamics:** Enthalpy change ( $\Delta H$ ) Free-energy change ( $\Delta G$ ) and entropy change ( $\Delta S$ )  
 $\Delta G = \Delta H - T\Delta S$
- **Periodicity:** Study of the reactions of Period 3 elements Na – Ar to illustrate periodic trends
- **Redox equilibria** Electrode potentials, Electrochemical series, Electrochemical cells
- **Transition metal** Complex formation, Variable oxidation states, Catalysis
- **Reactions of Inorganic compounds in aqueous solution.**

**Jun CHEM 5 exam:** 100 raw marks/120 UMS.

- 5-7 short answer questions plus 2-3 structured questions. Some synoptic elements
- 1 ¾ hours 20% of the total A-level marks

**CHEM 6: *Investigative and Practical Skills*** these are assessed throughout the year (and in the spring term in an assessed practical and test, *10% of the total A-level marks*).

## How the course is delivered?

Most of our courses are led by a single teacher. Occasionally we split groups but this is not common. Each of the four lessons in the week is 70 mins long and are built around a mixture of theory and practical sessions. Our teaching is structured around the usual pattern of a starter, main content and then a plenary. We help you check your learning through regular tests and use feedback to help guide improvements and to stretch and challenge all. We have a very active support programme too. This means that you will find a group of chemistry students in the labs at lunch time for extra support or challenge with one or two of our staff, please come and join them once you start your course. We supply you with text books and some revision guides for the duration of the course. We use AQA Chemistry by Ted Lister and Janet Renshaw (ISBN 978074878280). You will also be provided with past exam paper booklets during the year.

## Departmental Enrichment

The department provides focussed lunchtime exam clinics as well as intensive revision days during holidays. (Actually, although you might not think it, these are very popular with students!). You will find all the staff approachable and you will get plenty of help, both inside and outside lessons.

We also take part in university master-classes and science competitions.

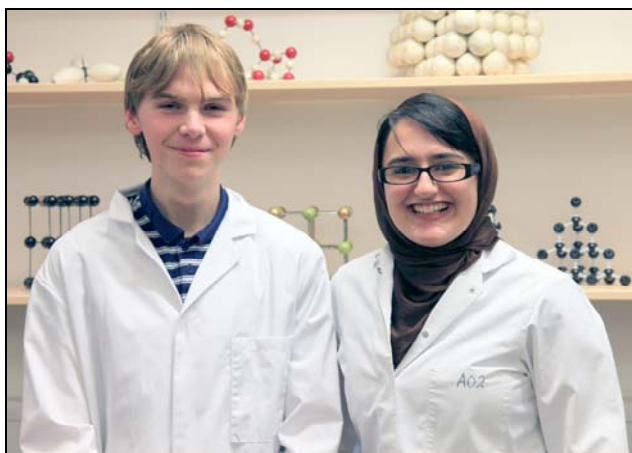
## Student success

The department is proud of the success of its students. We have a 100% pass-rate at A2 (and excellent value added, as recorded by ALIS and ALPS). Many students progress onto the most demanding of university courses, but we pride ourselves on helping all our students achieve the best they can and so to move on to their next step with confidence. We also hope they enjoy their study of chemistry!

## What does this course lead to?

Chemistry is a great choice of subject for people who want a career in health and clinical professions, such as medicine, nursing, biochemistry, dentistry or forensic science. It will also equip you for a career in industry, for example in the petrochemical or pharmaceutical industries.

In the past our students have joined university courses in Aerospace Engineering, Biology, Biomedical Science, Bio-Veterinary Science, Chemical Engineering, Chemistry, Civil Engineering, English, Geography, Pharmacy, Mathematics, Medical science, Medicine, Midwifery, Optometry, Physics and Zoology. To name but some!



Brendan (former Malet Lambert High School) and Mona (former Newland High School) are both on track for top grades.

Mona is aiming for medicine and Brendan for chemical engineering.

Their view of Chemistry?

“Chemistry is everything!”

## What can I do now that would help prepare me for this course?

Chemistry is an academically challenging course and most students do find the start of their A level study demanding. The key to success is, as ever, good preparation. How can you prepare? You need to be comfortable with the basic Chemistry from your GCSE course, most importantly: ‘Bonding and Structure’, ‘Periodicity’, ‘Chemical Formulae’, ‘Moles and Chemistry Calculations’ and ‘Balancing Equations’. When you come to our WykeStart sessions in the summer we will give you some induction materials to help prepare you but you should also take time to a look at these websites (particularly Chemguide)

<a href="http://www.gcsechemistry.co.uk">http://www.gcsechemistry.co.uk</a>	Some good free resources here
<a href="http://www.misterguch.brinkster.net/eqnbalance.html">http://www.misterguch.brinkster.net/eqnbalance.html</a>	Tutorials on chemical formulae and balancing equations – essential basics for AS Level Students
<a href="http://www.bbc.co.uk/schools/gcsebitesize/chemistry">http://www.bbc.co.uk/schools/gcsebitesize/chemistry</a>	Good basic material see GCSE AQA core and additional.
<a href="http://www.docbrown.info/page19/AQAchemistryAS.htm">http://www.docbrown.info/page19/AQAchemistryAS.htm</a>	Excellent revision material for all levels ‘Dr Brown’s site’ (but you have to rummage a bit)
<a href="http://www.webelements.com">http://www.webelements.com</a> <a href="http://www.chemsoc.org/viselements/">http://www.chemsoc.org/viselements/</a> <a href="http://www.theodoregray.com">http://www.theodoregray.com</a>	Useful sources of information on each of the elements.  Nice videos of explosions etc.
<a href="http://www.s-cool.co.uk">http://www.s-cool.co.uk</a>	Excellent revision source for both GCSE and ALevel.
<a href="http://www.chemguide.co.uk">http://www.chemguide.co.uk</a>	The best A-Level site very thorough and quite easy to navigate
<a href="http://www.mp-docker.demon.co.uk">http://www.mp-docker.demon.co.uk</a>	Includes revision quizzes specific to A-Level

There are also many revision guides on the market. They all offer similar help, their efficacy is probably determined by what works for you.

Your first few weeks of the course are very important and we will carefully monitor your progress and offer support and advice where necessary. Above all, you must be honest with yourself and undertake additional work/ come to support sessions as appropriate.