

Welcome to A Level Chemistry!

At Chew Valley we follow the AQA A Level chemistry specification which can be found here:

<https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF>

It is a two year course with 3 x 2-hour exams at the end of Y13

You will also be assessed on your practical skills and there will be questions on these practical skills in your exams

Preparation

You will need the following text(s) for the course:

AQA Chemistry A Level Year 1 Student Book by Ted Lister & Janet Renshaw RRP £29.99

AQA Chemistry A Level Year 2 Student Book by Ted Lister & Janet Renshaw RRP £28.99

OR

AQA Chemistry A Level Student Book by Ted Lister & Janet Renshaw RRP £43.99

You will also need a way of storing organised notes

Expectations

Students are expected to

- ensure their own notes are complete and comprehensive – if you have questions, clarify these with your teacher in the next lesson
- Re-do any homework/assessments which have been disappointing
- Use course textbook and additional resources to read around the subject
- Complete exam questions when you finish a topic
- Ensure practical book is complete and up to date

Essential skills

In order to do well at chemistry you will need be confident in the following skills.

If you are struggling with these skills seek support as early as you can when you start the course.

- Write balanced equations for the reactions from GCSE
- Determine the structure of a chemical from its name or formula
- Determine the bonding of a chemical from its name
- Predict, describe and explain properties based on its structure
- Rearrange formulae in equations
- Calculate relative formula mass
- Recall lots of information

What should you know on Day 1?

Revision topics AQA GCSE Chemistry	Spec points which were not covered in combined science but you must be aware of
1 Atomic structure and the periodic table	Properties of transition metals – comparison and typical properties
2 Bonding, structure, and the properties of matter.	- Sizes of particles and their properties - Uses of nanoparticles
3 Quantitative chemistry	- Percentage yield - Atom economy - Using concentrations of solutions in mol/dm³ - Use of amount of substance in relation to volumes of gases
4 Chemical changes	Titrations – method and calculation
5 Energy changes	Cell and fuel cells not required
6 The rate and extent of chemical change	
7 Organic chemistry	- Structure and formulae of alkenes - Reactions of alkenes - Alcohols - Carboxylic acids - Addition polymerisation - Condensation polymerisation
8 Chemical analysis	- Flame tests - Metal hydroxide test - Carbonate test - Halide test - Sulfate test

You should expect an assessment in the first few weeks to assess your baseline knowledge and understanding of chemistry.

Pre-course activities – these should be completed and handed in on your first lesson of A Level Chemistry in September

1. What would be the most appropriate unit to use for the following measurements?
 - a) The mass of water in a test tube.
 - b) The volume of water in a burette.
 - c) The radius of a gold atom.
 - d) The number of particles eg atoms in a chemical.
 - e) The temperature of a liquid
 - f) Scientists have been developing the production of a new material through the reaction of two constituents. Before going to commercial production, the scientists must give their data in the correct SI units. The flow rate of the critical chemical was reported as 240 grams per minute at a temperature of 20 °C. Re-write this flow rate using standard units. Show your working.
2. Calculate the atomic mass from data on isotopes
 - a) Neon has three isotopes. ^{20}Ne accounts for 90.9%, ^{21}Ne accounts for 0.3% and the last 8.8% of a sample is ^{22}Ne . What is the relative atomic mass of neon?
 - b) Magnesium has the following isotope abundances: ^{24}Mg : 79.0%; ^{25}Mg : 10.0% and ^{26}Mg : 11.0%. What is the relative atomic mass of magnesium?
 - c) Boron has two isotopes, ^{10}B and ^{11}B . The relative atomic mass of boron is 10.8. What are the percentage abundances of the two isotopes?
3. Calculate the relative formula mass
 - a) copper sulfate CuSO_4
 - b) ammonium chloride NH_4Cl
 - c) ammonium sulfate $(\text{NH}_4)_2\text{SO}_4$
4. Give the formulae of some common chemical substances
 - a) potassium manganate(VII)
 - b) hydrogen peroxide
 - c) ammonium carbonate
 - d) aluminium bromide
 - e) iron(II) sulfate
5. Write balanced equations for the following chemical reactions:
 - a) aluminium + bromine $\rightarrow$ aluminium bromide
 - b) calcium carbonate + hydrochloric acid $\rightarrow$ calcium chloride + water + carbon dioxide
 - c) silver nitrate + potassium phosphate $\rightarrow$ silver phosphate + potassium nitrate

Extended writing, research task – you have a choice of three titles:

- a) The history of the periodic table
- b) A comparison the similarities and differences between ionic, covalent and metallic structure and bonding
- c) The history of models of atomic structure

You should aim to fill at least one-side of A4. This can be hand written or digital. Provide at least 3 different references for the information you give.

The Periodic Table of Elements

1	2	Key										3	4	5	6	7	0	
		relative atomic mass atomic symbol name atomic (proton) number																
7	9											11	12	14	16	19	20	4
Li lithium 3	Be beryllium 4											B boron 5	C carbon 6	N nitrogen 7	O oxygen 8	F fluorine 9	Ne neon 10	He helium 2
23	24											27	28	31	32	35.5	40	
Na sodium 11	Mg magnesium 12											Al aluminium 13	Si silicon 14	P phosphorus 15	S sulfur 16	Cl chlorine 17	Ar argon 18	
39	40	45	48	51	52	55	56	59	59	63.5	65	70	73	75	79	84		
K potassium 19	Ca calcium 20	Sc scandium 21	Ti titanium 22	V vanadium 23	Cr chromium 24	Mn manganese 25	Fe iron 26	Co cobalt 27	Ni nickel 28	Cu copper 29	Zn zinc 30	Ga gallium 31	Ge germanium 32	As arsenic 33	Se selenium 34	Kr krypton 36		
85	88	89	91	93	96	[98]	101	103	106	108	112	115	119	122	128	131		
Rb rubidium 37	Sr strontium 38	Y yttrium 39	Zr zirconium 40	Nb niobium 41	Mo molybdenum 42	Tc technetium 43	Ru ruthenium 44	Rh rhodium 45	Pd palladium 46	Ag silver 47	Cd cadmium 48	In indium 49	Sn tin 50	Sb antimony 51	Te tellurium 52	Xe xenon 54		
133	137	139	178	181	184	186	190	192	195	197	201	204	207	209	[209]	[222]		
Cs caesium 55	Ba barium 56	La* lanthanum 57	Hf hafnium 72	Ta tantalum 73	W tungsten 74	Re rhenium 75	Os osmium 76	Ir iridium 77	Pt platinum 78	Au gold 79	Hg mercury 80	Tl thallium 81	Pb lead 82	Bi bismuth 83	Po polonium 84	Rn radon 86		
[223]	[226]	[227]	[261]	[262]	[266]	[264]	[277]	[268]	[271]	[272]	[285]	[286]	[289]	[289]	[293]	[294]	[294]	
Fr francium 87	Ra radium 88	Ac* actinium 89	Rf rutherfordium 104	Db dubnium 105	Sg seaborgium 106	Bh bohrium 107	Hs hassium 108	Mt meitnerium 109	Ds darmstadtium 110	Rg roentgenium 111	Cn copernicium 112	Nh nihonium 113	Fl flerovium 114	Mc moscovium 115	Lv livermorium 116	Ts tennessine 117	Og oganeson 118	

* The Lanthanides (atomic numbers 58 – 71) and the Actinides (atomic numbers 90 – 103) have been omitted. Relative atomic masses for **Cu** and **Cl** have not been rounded to the nearest whole number.