

Chemistry transition work

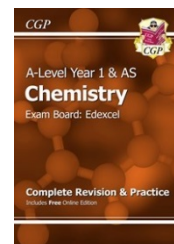
At A-Level we follow the **AQA Specification** and will study the following topics:

Physical Chemistry (Atomic Structure; Calculations; Bonding; Energetics; Kinetics; Equilibria; Acids and Bases; Electrode Potential).

Inorganic Chemistry (Redox; Group 2; Group 7; Transition Metals).

Organic Chemistry (Alkanes; Halogenoalkanes; Alkenes; Alcohols; Carbonyl compounds; NMR).

Practical Endorsement involving practical work across the specification.



<https://www.aqa.org.uk/subjects/science/as-and-a-level/chemistry-7404-7405>

The A level course has a balance between Physical, Inorganic and Organic Chemistry, so to help prepare you for the step up and keep you engaged with Chemistry over the summer, choose one or more of the investigations outlined below.

The number of flasks indicates the level of difficulty of each task. These mirror the progression which you will experience over the course.

It is important that you are confident in mathematical topics in order to thrive in A Level Chemistry.



Small step-up from GCSE – builds on knowledge & skills you already have



Larger step-up from GCSE – builds new knowledge & skills



Complex ideas & concepts

We'd like you to bring details of your investigation(s) to enrolment in August, but if you'd like to get in touch about the project, get some feedback or find out more about the course, please email Susan Hammond at shd@woking.ac.uk

Happy investigating!

Bestchoice

This is a website provided by the University of Auckland in New Zealand, with a section for the UK exam boards. It is mainly aimed at A level, and most of the content is accessed by subscription, but there is a free GCSE section.

Sign up to Bestchoice GCSE

<http://www.bestchoice.net.nz>.

Sign up for a new account.

Select UK Schools and Colleges

Use your first initial and surname for the username, all lowercase (e.g. shammond),

Enrol in a class (class ID: 15493; password: GCSE). Course is AQA, centre number is 64986.



Work through as much of the GCSE course as you can. This will be a great way to revise your GCSE work, and prepare for the first year A level.

Silver CREST award

This is a nationally recognised scheme for student-led projects in the STEM subjects. Its aim is to enable young people to think like scientists and engineers, and is run by the British Science Association. It costs £10 to enter for a CREST award, but you are very welcome to complete a project and bring it along to enrolment without entering for the actual award.

I am an examiner for Silver and Gold awards, and will be happy to advise you on your project.



Undertake a Silver CREST award (for 14-16 year-olds) (£10 fee)

1. Go onto the CREST website at <https://www.crestawards.org/crest-silver>
2. Look at the “Silver student guides” and the “guidance of what’s expected at Silver level, with examples”. When I mark projects, it is not uncommon to have to send them for resubmission because students have not followed the guidance. Make sure there is plenty of research work.
3. Go to the resource library, look at the Chemistry projects. Many of them require a school lab, but they will give you an idea of what sort of thing you could choose. Here are some suggestions to do at home.
 - Indicators for acids and bases. This one gives details about red cabbage indicator <http://www.kitchenchemistry.eu/topics/reactions-that-involve-colour-changes/acid-base-indicators-from-cabbage-water-and-other-coloured-materials/> , black tea is an easy one to do. You should then research more. Write down a rough plan for what you are going to do each week. Do plenty of research, with proper references (look up Harvard references). Explain the science behind your experiments. Take lots of photos of your work. Explain what problems you had and how you overcame them. Think about safety.
 - Coffee filter chromatography <https://www.scientificamerican.com/article/chromatography-be-a-color-detective/> . Students frequently look at simple chromatography in Year 7, so you will have to make sure that you carry out the extension activities here, and also search for further ones. Research and explain the science behind chromatography (part of the A level course).
 - Sourdough bread making <http://studentsdiscover.org/lesson/sourdough-for-science/> (hints – to make a good sourdough starter, use some rye flour, and include a few sultanas in your first mix as this introduces yeasts). Lots of scope for research here, and plenty of practical work.

Extension work

This is very advanced work, and is very much for students expecting to get grade 9s in GCSE sciences/maths, and applying for Oxford or Cambridge. Even if you are at that level, some of this will still be too big a step, so be selective with what you attempt.



Extension work and Chemistry Olympiads

1. Look at the extension work from the Cambridge University website <https://www.ch.cam.ac.uk/chemistry-extension-materials-schools-and-colleges> . Some of this is covered in the second year of A level, some is not covered until university.
2. There is a Chemistry Olympiad aimed at students at the end of Year 12, called the Cambridge Chemistry Challenge. They have a web page at <http://www.c3i6.org/> , which has a bank of past puzzle questions. Even for students doing A level, these are very challenging, and require a great deal of general chemistry knowledge. If you do have a go at these, use Wikipedia.