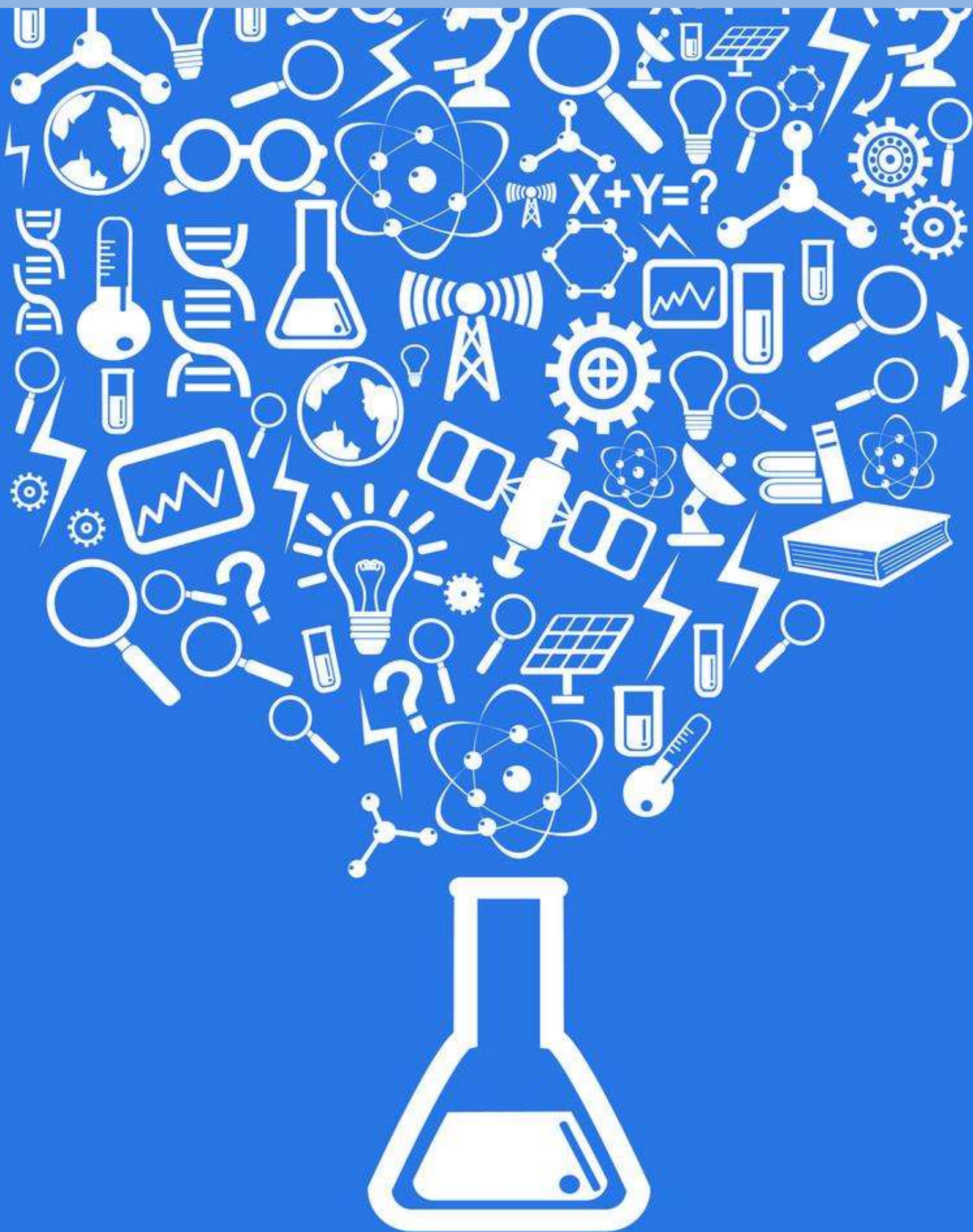


# A-Level Chemistry Course Handbook





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A range of practical experiences is given within this course which is vital as part of a learner's development. 'Foundations in chemistry', acts as an important bridge into AS and A level chemistry from chemistry within science courses at GCSE level.

At A-level, you'll look in more detail at physical, inorganic and organic chemistry and find out how they are linked to applications of energy use to every-day life, health care, industrial processes and current environmental concerns associated with sustainability.

Chemistry helps you to understand the world around you. Why do leaves change colour in the fall? Why are plants green? How is cheese made? What is in soap and how does it clean? These are all questions that can be answered using chemistry.

Chemistry can help you make informed decisions. Will a product work as advertised or is it a scam? If you understand how chemistry works you'll be able to separate reasonable expectations from pure fiction.

Chemistry teaches useful life skills, such as learning how to be objective and how to reason and solve problems. These analytical skills can be applied to so many different careers.

# **Classroom expectations**

## **What you will need**

*Every lesson* you should arrive with a pen, a pencil, a ruler, a scientific calculator, a protractor and your notebook.

## **What you need to do**

*Work hard.* A-Levels are difficult for many reasons; the content is advanced, the skills are technical, the level of precision is high and the ability to process all the information whilst making links between topics is essential.

## **Where you need to be**

*In the classroom during lessons.* The course builds on knowledge over time so you need to be in all lessons so as not to miss critical information that could be the 1 mark difference between grades at the end of the course.

## **When you need to be there**

*On time.* Punctuality is a very important quality and highly desirable by potential employers. When we come to writing your references this is the type of information that we would like to include. Lessons are designed around you all being ready to work for the full hour and your absence could make things difficult for not only the teacher but the other students.

## **How you need to conduct yourself**

*With respect;* not only for the teacher but for your peers and yourself. In the classroom you should be attempting all work given and acting on feedback, outside of the classroom you need to be going over notes and reading around each topic to increase your familiarity.

## **What we will do for you**

Lessons will be well planned and structured in a manner than allows all learners to access the content. All specification points will be covered through the course and a range of in class assessments will allow us to track your progress over time. If you are struggling with any concept or have any questions your teachers will be more than happy to help when asked. If we cannot make time immediately we will organise a more convenient opportunity to go through your queries.



# Specification Overview

## 2a. Overview of A Level in Chemistry A (H432)

Learners must complete all components (01, 02, 03 and 04).

Content Overview	Assessment Overview	
<p>Content is split into six teaching modules:</p> <ul style="list-style-type: none"><li>• Module 1 – Development of practical skills in chemistry</li><li>• Module 2 – Foundations in chemistry</li><li>• Module 3 – Periodic table and energy</li><li>• Module 4 – Core organic chemistry</li><li>• Module 5 – Physical chemistry and transition elements</li><li>• Module 6 – Organic chemistry and analysis</li></ul> <p>Component 01 assesses content from modules 1, 2, 3 and 5.</p> <p>Component 02 assesses content from modules 1, 2, 4 and 6.</p> <p>Component 03 assesses content from all modules (1 to 6).</p>	<p>Periodic table, elements and physical chemistry (01)</p> <p>100 marks</p> <p>2 hours 15 minutes written paper</p>	<p><b>37%</b></p> <p>of total A level</p>
	<p>Synthesis and analytical techniques (02)</p> <p>100 marks</p> <p>2 hours 15 minutes written paper</p>	<p><b>37%</b></p> <p>of total A level</p>
	<p>Unified chemistry (03)</p> <p>70 marks</p> <p>1 hour 30 minutes written paper</p>	<p><b>26%</b></p> <p>of total A level</p>
	<p>Practical Endorsement in chemistry (04)</p> <p>(non exam assessment)</p>	<p><b>Reported separately</b></p> <p>(see Section 5)</p>

All components include synoptic assessment.

(Full specification link)

<https://www.ocr.org.uk/qualifications/as-and-a-level/chemistry-a-h032-h432-from-2015/>

# Unit Breakdown

## **Module 1 – Development of practical skills in chemistry**

- Practical skills assessed in a written examination
- Practical skills assessed in the practical endorsement

## **Module 2 – Foundations in Chemistry**

- Atoms compounds, molecules and equations
- Amount of substance
- Acid-base and redox reactions
- Electrons, bonding and structure

## **Module 3 – Periodic Table and Energy**

- The Periodic Table and periodicity
- Group 2 and the halogens
- Qualitative analysis
- Enthalpy Changes
- Reaction rates and equilibrium (qualitative)

## **Module 4 – Core Organic Chemistry**

- Basic concepts
- Hydrocarbons
- Alcohols and haloalkanes

- Organic synthesis
- Analytical Techniques (IR and MS)

## **Module 5 – Physical chemistry and transition elements**

- Reaction rates and equilibrium (quantitative)
- pH and buffers
- Enthalpy , entropy and free energy
- Redox and electrode potentials
- Transition elements

## **Module 6 – Organic Chemistry and Analysis**

- Aromatic compounds
- Carbonyl compounds
- Carboxylic acids and esters
- Nitrogen compounds
- Polymers
- Organic synthesis
- Chromatography and spectroscopy (MNR)

# Course Structure

Chemistry A is a content-led approach, it is flexible where the specification is divided into topics, each covering different key concepts of chemistry. As learners progress through the course they will build on their knowledge of the Chemistry, applying their understanding to solve problems on topics ranging from entropy and free energy to modern analytical techniques. For A level only, the Practical Endorsement will also support the development of practical skills

OCR's A Level in Chemistry A specification aims to encourage learners to:

- develop essential knowledge and understanding of different areas of the subject and how they relate to each other
- develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods
- develop competence and confidence in a variety of practical, mathematical and problem solving skills
- develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject
- understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society (as exemplified in 'How Science Works' (HSW)).

Module 1 of the specification content relates to the practical skills learners are expected to gain throughout the course, which are assessed throughout the written examinations and also through the Practical Endorsement.

Practical activities are embedded within the learning outcomes of the course to encourage practical activities in the classroom that contribute to the achievement of the Practical Endorsement as well as enhancing learners' understanding of chemistry theory and practical skills.

# **Homework Policy**

## **Frequency, format and duration**

Homework will be set at least every two weeks. It can be set weekly or fortnightly.

Homework will be relevant to the scheme of learning, exam specifications and classroom learning. Homework will be engaging and challenging with clear links to the knowledge or skills required with completing the course or undertaking exams.

## **Setting Homework**

Students must write the homework task and the deadline date. Teachers will also upload the homework and relevant resources onto Google Classroom, to which all students will be assigned.

## **Feedback**

Homework forms an integral part of the learning and specifically the lessons. Homework will be checked as part of a lesson or the product of the homework shall be used in a lesson to ensure that students can see the link between the task and their learning.

## **Marking**

Homework will be marked either in class, by peers, or by the teacher. It is important that students get rapid feedback on their work to avoid learnt misconceptions. Homework should be completed in or stuck into books/included with classwork, so that students can see the value of their work.

## **Further reading**

A level Chemistry for OCR A Rob Ritchie & Dave Gent ISBN 978-0-19835197-9

A-Level Chemistry: Essential Maths Skills (CGP A-Level Chemistry) Paperback

ISBN 978-1782944720

<https://www.s-cool.co.uk/a-level/chemistry>

<https://www.rsc.org>

<http://chemguide.co.uk>

<https://www.youtube.com>

<https://ocr.org.uk/qualifications/as-and-a-level/chemistry-a-h032-h432-from-2015/>

<https://studywise.co.uk/a-level-revision/>



# Student Agreement

## ***Attendance***

Science staff will plan all lessons expecting a full class; therefore you should attend all lessons promptly and ready to learn. Poor attendance to lessons has the greatest detrimental impact on A-Level grades.

## ***Planned absence***

If you know you will not be able to attend a lesson it is your responsibility to ensure you do not miss out on your learning. Teachers will not chase you to get caught up. You must make the teacher aware prior to the lesson (not on the day) that you will not be able to make it and ask for appropriate catch up work.

If the teacher is not able or does not provide you with work you must speak to your course colleagues for the notes/work missed. If you are still concerned speak to the course teacher again directly (not email).

**Teaching staff will need at least a week's notice of a planned absence, in order to plan their lesson accordingly.**

## ***Unplanned absence***

If you are unable to attend a lesson for an unplanned reason you must;

- Email the teacher at the first opportunity to make them aware you are unable to attend the lesson
- Ask the teacher for appropriate catch up work.
- If the teacher is not able or does not provide you with work you must speak to your course colleagues for the notes/work missed. If you are still concerned speak to the course teacher again directly when you are back in school
- **Do not wait until your next lesson with that member of staff.**

## ***Valid reasons for absence.***

- Lesson clash - course teachers need to be made aware of this asap
- Educational visit
- University interview/ open day
- Illness, that prevents you from actively partake in the lesson.

**Teaching staff will need at least a week's notice of a planned absence, in order to plan their lesson accordingly.**

## **Organisation:**

You must bring the following to all sessions:

- Homework
- Notebook
- Pen
- Pencil
- Ruler
- Scientific Calculator
- Protractor

## **Conduct and Appearance:**

The Academy and the Science Department expect the highest standards of professionalism from our 6<sup>th</sup> Form students. Inappropriate behaviour in the science rooms endangers people and will not be tolerated. Workplace dress is expected at all times. Goggles and relevant protective equipment must be worn when conducting any practical activity.

## **Study Periods**

Science students should be conducting at least 5 hours of independent work outside of lessons consisting of either further reading, writing up class notes or exam questions

## **Deadlines**

All classwork and homework needs to be completed on time. Failure to do this will lead to 6th Form referral catch up sessions.

***“I agree to meet the expectations of the Science Department as outlined above and will seek to at all times to do my best to further develop myself and my knowledge of my chosen subject.”***

SIGNED:

DATE:

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Failure to meet the professional standard may result in you being removed from the course.