

Switching to OCR A from AQA

Introduction

We are really excited about our GCE Chemistry A qualification. Whether taking on the AS Level or the full A Level, this fantastic course is a great qualification for those with an interest in the subject. Why choose Chemistry A?

- Building on our existing popular course, the specification was updated in consultation with teachers, higher education, learned societies and industry.
- The 'Big Ideas' of chemistry are arranged in topics that underpin the knowledge and understanding needed for the next generation of chemists.
- Chemistry A is enjoyable to teach and learn, giving learners the essentials for chemistry-related higher education courses as well as many transferable, marketable skills.
- The chemical topics are presented in a clear and logical linear order, with maths and How Science Work opportunities clearly highlighted, allowing you flexibility in how to approach the teaching.
- There are many highlighted opportunities for hands-on practical work, linking to our flexible practical assessment model.

Textbook comparison

We have not included a textbook comparison in this switching document as there are a number of textbooks available for each exam board's qualifications, and the order and organisation of content within these textbooks can vary. However, similarities in content across exam boards mean that it is possible to use any textbook for the core content of any board's qualifications. The specification can be used to identify relevant content, as well as that which is not required for a specific qualification. If you need further clarification on any specific content, you can email our Subject Advisor team at science@ocr.org.uk.

Support from OCR

We offer a range of support to teachers of our qualifications. This includes:

- A dedicated Subject Advisor team, with teaching and assessment experience, available to answer your queries and support your delivery of our qualifications. You can contact us by email at science@ocr.org.uk or by phone on 01223 553998.
- Monthly newsletters highlighting new resources, CPD courses, and other news about our qualifications.
- An online scheme of work builder which helps you create a bespoke scheme of work using the extensive range of resources we have provided for each specification.
- A wide range of support materials, including handbooks covering practical and mathematical skills, delivery guides, lesson elements, practical activity suggestions, candidate exemplar resources, and more.
- Free access to ExamBuilder, our mock assessment service that allows you to create your own bespoke assessments.
- Termly regional Science Teacher Networks, giving you the opportunity to meet with other teachers and our Subject Advisors.
- CPD courses, including courses for teachers new to teaching our qualifications and courses on outcomes from previous examination series to help inform your teaching.
- You can also follow and interact with our Subject Advisors on Twitter ([@ocr_science](https://twitter.com/ocr_science)).

Key differences

| OCR Chemistry A (H032/H432) | AQA Chemistry (7404/7405) |
|--|---|
| Practical skills take centre stage , detailed in full at the start of the specification in a separate module for clarity and prominence | Required practical activities listed in the specification. |
| Flexible practical assessment that allows you to use your own practical activities or select from our range of fully-detailed suggested activities. | Fixed set of 12 practical activities you have to deliver. |
| Extensive support for mathematical skills development , with linking of skills in the specification and a dedicated Mathematical Skills Handbook. | Linking in the specification and outline suggestions of activities. |
| Clear labelling and organisation of the learning outcomes in the specification and simple mapping of modules to the exam papers. | Chemistry content presented in unlabelled lists within sub-sections and division of Physical chemistry topics between papers. |
| Fewer marks in the AS and A Level assessments , giving learners more time to develop their answers. (AS 140 marks in 180 minutes; A Level 270 marks in 360 minutes) | 20 more marks in AS Level and 30 more marks in A Level compared to OCR Chemistry A. |

Content

The content within the [OCR Chemistry A specification](#) covers the key concepts of chemistry and will be very familiar. We've laid it out to support the co-teaching of the AS and A level and provide a logical linear progression through the A level.

| OCR Chemistry A (H032/H432) | AQA (7404/7405) (* – topic is split) |
|--|--|
| <p>Module 1: Development of practical skills in chemistry</p> <p>Practical skills assessed in a written examination and Practical skills assessed in the practical endorsement</p> | <p>The same practical skills, as mandated by the DfE, are listed in Chapter 7 and 8 of the AQA specification.</p> |
| <p>Module 2 – Foundations in chemistry</p> <p>Atoms, compounds, molecules and equations Amount of substance Acid–base and redox reactions Electrons, bonding and structure</p> | <p>3.1.1 Atomic structure 3.1.2 Amount of substance 3.1.3* Bonding 3.1.7 Oxidation, reduction and redox equations</p> |
| <p>Module 3 – Periodic table and energy</p> <p>The periodic table and periodicity Group 2 and the halogens Qualitative analysis Enthalpy changes Reaction rates and equilibrium (qualitative)</p> | <p>3.1.3* Bonding 3.1.4 Energetics 3.1.5 Kinetics 3.1.6 Chemical equilibria and Le Chatelier's principle 3.2.1 Periodicity 3.2.2 Group 2, the alkaline earth metals 3.2.3 Group 7(17), the halogens 3.2.4 Properties of Period 3 elements and their oxides (not Period 3 oxides)</p> |

| OCR Chemistry A (H032/H432) | AQA (7404/7405) (* – topic is split) |
|---|---|
| <p>Module 4 – Core organic chemistry</p> <p>Basic concepts</p> <p>Hydrocarbons</p> <p>Alcohols and haloalkanes</p> <p>Organic synthesis</p> <p>Analytical techniques (IR and MS)</p> | <p>3.3.1 Introduction to organic chemistry</p> <p>3.3.2 Alkanes</p> <p>3.3.4 Alkenes</p> <p>3.3.3 Halogenoalkanes</p> <p>3.3.5 Alcohols</p> <p>3.3.6 Organic synthesis</p> |
| <p>Module 5 – Physical chemistry and transition elements</p> <p>Reaction rates and equilibrium (quantitative)</p> <p>pH and buffers</p> <p>Enthalpy, entropy and free energy</p> <p>Redox and electrode potential</p> <p>Transition elements</p> | <p>3.1.8 Thermodynamics</p> <p>3.1.9 Rate equations</p> <p>3.1.10 Equilibrium constant K_p for homogeneous systems</p> <p>3.1.11 Electrode potentials and electrochemical cells</p> <p>3.1.12 Acids and bases</p> <p>3.2.5 Transition metals</p> <p>3.2.6 Reaction of ions in aqueous solution</p> |
| <p>Module 6: Organic chemistry and analysis</p> <p>Aromatic compounds</p> <p>Carbonyl compounds</p> <p>Carboxylic acids and esters</p> <p>Nitrogen compounds</p> <p>Polymers</p> <p>Organic synthesis</p> <p>Chromatography and spectroscopy (NMR)</p> | <p>3.3.7 Optical isomerism</p> <p>3.3.8 Aldehydes and ketones</p> <p>3.3.9 Carboxylic acids and derivatives</p> <p>3.3.10 Aromatic chemistry</p> <p>3.3.11 Amines</p> <p>3.3.12 Polymers</p> <p>3.3.13 Amino acids, proteins and DNA</p> <p>3.3.14 Organic synthesis</p> <p>3.3.15 Nuclear magnetic resonance spectroscopy</p> <p>3.3.16 Chromatography</p> |

| OCR Chemistry A (H032/H432) | AQA (7404/7405) (* – topic is split) |
|---|--|
| <p>Appendix 5e: Mathematical requirements</p> <p>Arithmetic and numerical computation Handling data Algebra Graphs Geometry and trigonometry</p> | <p>Chapter 6: Mathematical requirements and exemplifications</p> <p>Arithmetic and numerical computation Handling data Algebra Graphs Geometry and trigonometry</p> |

Content in OCR Chemistry A not in AQA Chemistry:

- shapes of atomic orbitals
- fragmentation patterns in mass spectrometry
- iodine-thiosulfate titrations and calculations
- formation of bromoalkanes from alcohols
- reduction of aromatic nitro compounds
- carbonyl compound reactions with 2,4-DNP
- carboxylic acid reactions with metals
- carboxylic acid reactions with PCl_5
- alkene reactions with hydrogen
- halogenation of aromatics
- Friedel-Crafts alkylation
- hydrolysis of nitriles
- phenol reactions with alkalis, bromine, and dilute nitric acid
- explaining boiling points in terms of intermolecular forces and packing
- electron donating and withdrawing groups in aromatic compounds
- defining and using the term 'half-life'
- using kinetic data to propose steps in reaction mechanisms

Content in AQA Chemistry not in OCR Chemistry A:

- column chromatography
- gas chromatography-mass spectrometry
- reactions of halides with sulfuric acid
- explaining origin of colour in transition metal complexes
- explaining/predicting the stability of complex ions

- EDTA as a hexadentate ligand
- precipitation reactions as acid-base equilibria
- properties, bonding and structure of period 3 oxides
- formation of amides from amines and acyl chlorides
- fermentation
- formation of alkenes from haloalkanes
- transesterification
- structure and properties of fats and oils
- advantages and disadvantages of biodiesel use
- naming acyl chlorides
- distinguishing optical isomers using plane-polarised light
- separating crude oil using fractional distillation
- fuel additives
- cracking hydrocarbons
- proteins and hydrolysis of proteins
- structure of proteins
- properties and uses of polymers
- why theoretical lattice enthalpies differ from experimental values
- catalyst poisoning
- effect of pH and ligands on transition metal ion redox potential
- hydrogen fuel cells
- simplified lithium cell reactions

Please note: the original specifications should be used as the definitive source of qualification content.

Assessment – AS Level

| OCR Chemistry A (H032) | AQA (7404) |
|--|--|
| <p>AS Paper 1: Breadth in chemistry Modules 1–4 70 marks, 50% of AS Level Written paper – 1 hour 30 minutes</p> <p>Section A: multiple choice questions, 20 marks. Section B: short answer question styles (structured questions, problem solving, calculations, practical) and extended response questions, 50 marks.</p> | <p>AS Paper 1: Inorganic and Physical Chemistry: Sections 3.1.1–3.1.4, 3.1.6, 3.1.7, 3.2.1–3.2.3 and relevant practical skills 80 marks, 50% of AS Level Written paper – 1 hour 30 minutes</p> <p>65 marks of short and long answer questions; 15 marks of multiple choice questions.</p> |
| <p>AS Paper 2: Depth in chemistry Modules 1–4 70 marks, 50% of AS Level Written paper – 1 hour 30 minutes</p> <p>Includes short answer (structured questions, problem solving, calculations, practical) and extended response questions, including those marked using Level of Response mark schemes.</p> | <p>AS Paper 2: Organic and Physical Chemistry: Sections 3.1.2–3.1.6, 3.3.1–3.3.6 and relevant practical skills 80 marks, 50% of AS Level Written paper – 1 hour 30 minutes</p> <p>65 marks of short and long answer questions; 15 marks of multiple choice questions.</p> |

Assessment – A Level

| OCR Chemistry A (H432) | AQA (7405) |
|--|--|
| <p>A Level Paper 1: Periodic table, elements and physical chemistry Modules 1, 2, 3 & 5 100 marks, 37% of A Level Written paper – 2 hours 15 minutes</p> <p>Section A: multiple choice questions, 15 marks.</p> <p>Section B: short answer question styles (structured questions, problem solving, calculations, practical) and extended response questions, 85 marks.</p> | <p>A Level Paper 1: Inorganic and Physical Chemistry: Sections 3.1.1–3.1.4, 3.1.6–3.1.8, 3.1.10–3.1.12, 3.2 and relevant practical skills 105 marks, 35% of A Level Written paper – 2 hours</p> <p>Short and long answer questions.</p> |
| <p>A Level Paper 2: Synthesis and analytical techniques, Modules 1, 2, 4 & 6 100 marks, 37% of A Level Written paper – 2 hours 15 minutes</p> <p>Section A: multiple choice questions, 15 marks.</p> <p>Section B: includes short answer question styles (structured questions, problem solving, calculations, practical) and extended response questions, 85 marks.</p> | <p>A Level Paper 2: Organic and Physical Chemistry: Sections 3.1.2–3.1.6, 3.1.9, 3.3 and relevant practical skills 105 marks, 35% of A Level Written paper – 2 hours</p> <p>Short and long answer questions.</p> |
| <p>A Level Paper 3: Unified chemistry Modules 1–6 70 marks, 26% of A Level Written paper – 1 hour 30 minutes</p> <p>Includes short answer (structured questions, problem solving, calculations, practical) and</p> | <p>A Level Paper 3: Chemistry: Any content and any practical skills 90 marks, 30% of A Level Written paper – 2 hours</p> <p>Practical techniques and data analysis, 40 marks. Questions testing across the</p> |

| OCR Chemistry A (H432) | AQA (7405) |
|--|--|
| extended response questions. | specification, 20 marks. Multiple choice questions, 30 marks. |
| <p>Practical Endorsement in chemistry Separately reported non-exam assessment, with candidates demonstrating competence in a range of skills and techniques, in a minimum of 12 assessed practical activities. Teacher assessment against the Common Practical Assessment Criteria.</p> | <p>Practical Endorsement in chemistry Separately reported non-exam assessment, with candidates demonstrating competence in a range of skills and techniques, in a minimum of 12 assessed practical activities. Teacher assessment against the Common Practical Assessment Criteria.</p> |

Want to switch to OCR?

If you're an OCR-approved centre, all you need to do is download the specification and start teaching.

Your exams officer can complete an [expression of interest form](#) which enables us to provide appropriate support to them. When you're ready to enter your students, you just need to speak to your exams officer to:

1. Make estimated entries by 10 October so we can send you any early release materials, prepare the question papers and ensure we've got enough examiners.
2. Make final entries by 21 February

If you are not already an OCR-approved centre please refer your exams officer to the [centre approval section](#) of our admin guide.

Practical Endorsement Administration (A Level only)

The requirements for the Practical Endorsement have been set by the Department for Education and Ofqual working with all awarding bodies to ensure a common approach. Just as when following the AQA A Level Chemistry qualification, your A Level learners studying OCR Chemistry A will need to demonstrate to you, their teacher(s), that they are competent in each of the skills and techniques defined for A Level chemists, and are consistently and routinely demonstrating competence against the Common Practical Assessment Criteria (CPAC).

You will need to:

- Keep records of carrying out practical activities as well as your assessment of competence of each of your learners in each of these skills and techniques. This can be done using our popular [OCR PAG tracker spreadsheet](#). Centres have found the tracker helpful and easy to use, and updated improved versions are available from September 2016.
- Designate a 'Lead Teacher' who will need to make sure that they have completed the [online Lead Teacher training](#)
- Email us at science@ocr.org.uk to let us know you've started teaching the qualification. This will make sure we have up-to-date information on your centre for planning monitoring visits. When a monitoring visit takes place at your centre for

Chemistry it will be carried out by an OCR-appointed monitor applying the criteria agreed across all awarding organisations. Up-to-date details on the monitoring process are available on the [Positive about practical](#) page.

Students need to keep records of their practical work, which can be done in whatever format best suits you and your learners, be it a lab book, a loose leaf folder or an electronic record. Help, guidance and training are available from our [Positive about practical page](#).

Next steps

1. Familiarise yourself with the specification, sample assessment materials and teaching resources on the [OCR Chemistry A](#) qualification page (Assessment Preparation) of the OCR website.
2. Browse the [online delivery guides](#) for teaching ideas and use the [Scheme of work builder](#) to create your personal scheme of work.
3. [Get a login](#) for our secure extranet, [Interchange](#) – allows you to access the latest past/practice papers and use our results analysis service, [Active Results](#).
4. Sign up to receive [subject updates](#) by email.
5. Sign up to attend a [training event](#) or take part in webinars on specific topics running throughout the year or our Q&A webinar sessions every half term.
6. Attend one of our free teacher network events that are run in each English region every term. These are hosted at the end of the school day in a school or college, with teachers sharing good practice and Subject Advisors on hand to lead discussion and answer questions.
7. Follow us on Twitter ([@ocr_science](#)) where you can have discussions with other teachers and OCR Subject Advisors, and where new resources are developed and posted first.