Switching to OCR B (Salters) from Eduqas

Introduction

We are really excited about our GCE Chemistry B (Salters) 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 B (Salters)?

- Building on our existing popular course of over 20 years, the specification has been updated in consultation with teachers, higher education, learned societies, industry and heavily supported by the University of York Science Education group.
- Chemical concepts (Chemical Ideas) are taught in a spiral curriculum in the context of contemporary Chemical Storylines, underpinning the knowledge and understanding needed for the next generation of chemists.
- Chemistry B (Salters) is enjoyable to teach and learn, giving learners the essentials for chemistry-related higher education courses as well as many transferable, marketable skills, with a strong focus on practical skills and chemical literacy.
- The chemical concepts are clearly presented in the specification, with maths, How Science Works and practical opportunities highlighted throughout, supporting you in your teaching, and linked to our flexible practical assessment model.
- An integrated textbook is available, bringing together the Chemical Ideas and Chemical Storylines, with links to specially developed support resources available through our publishing partner.

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).

Key differences

OCR Chemistry B (H033/H433)	Eduqas (B410QA/A410QS)
Practical skills take centre stage, detailed in full at the start of the specification in a separate module for **clarity** and **prominence**	Specified practical activities listed in the specification
Flexible practical assessment that allows you to use your own practical activities, those provided through our publishing partner or from our range of fully-detailed suggested activities.	A core set of 24 specified practical activities.
The core chemical concepts covered in contemporary contexts with a strong focus on **practical skills** and **chemical literacy** development.	The core chemical concepts divided into three main topics.
Extensive additional guidance throughout the specification, linking opportunities for **practical**, **mathematical** and **how science works** skills to learning outcomes.	Linking to skills at sub-topic level.
All papers assess content from across all teaching modules, providing a thorough test of a candidate's knowledge, understanding and skills.	Division of Core Concepts, Physical, Inorganic, Organic and Analytical chemistry between the 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 (180 minutes) and 30 more marks in A Level (375 minutes) compared to OCR Chemistry B.

Content

One of the pillars of the Chemistry B (Salters) specification is that the qualification is taught in a 'context-led' manner. Everyday examples of chemistry in action, as well as modern industrial and other applications of chemistry, are used to set the scene in which the concepts are allowed to unfold.

The specification is divided into a series of modules that are designed to be taught through 'Storylines'. Each Storyline discusses a particular application or series of applications of chemistry. The Chemical Ideas are split across the modules to tie in naturally with the Storylines, rather than being split into related areas of content. This results in a 'spiral curriculum' in which areas of chemistry are revisited and reinforced throughout the course.

To exemplify this structure, the learning outcomes of the *Elements of life* Storyline can be summarised as the following journey from the creation of atoms in the Big Bang to quantitative analysis of solutions:

From the formation of hydrogen, then helium and ultimately the heavier elements in **nuclear fusion**, the Storyline moves on to **atomic structure** and then the fundamentals of **mass spectrometry**. The role of **electromagnetic radiation** in our analysis of star light is used to introduce the **quantum nature of energy** in atoms and their detailed **electronic structure** to the level of **orbitals**. We then move on to the story of the taming of the elements into the **Periodic Table** and our subsequent ability to make sense of the **trends in properties** of the elements. Returning to outer space, the nature of the interstellar gas clouds is used to introduce **covalent bonding** and **molecular shape**. Focussing then on a more human scale, the composition of the human body is used to introduce the **mole concept**, **relative masses,** and **amounts of substance** calculations. The nature of chemistry in our bodies such as in our bones and our nervous system provides the context for the **properties of ionic substances**, including **salt formation**, **structure** and **solubility**. The links between **structure and properties** is discussed in detail including **melting and boiling points**, **solubility** and **electrical conductivity**. Greater detail of **Group 1 and Group 2 elements** is then studied, looking at applications of the elements and compounds of the s-block and their property trends such as **first ionisation enthalpy**, **reactivity with water and oxygen**, and the **stability of the Group 2 carbonates**. Finally, the **basic** nature of **Group 2 oxides and hydroxide** leads into **acid–base chemistry** and the introduction of **titration techniques and calculations**.

From a Chemical Ideas point of view, the weaving of chemical concepts throughout the Storylines can be exemplified by looking at the development of the ideas of structure and properties of materials:

Firstly in *Elements of Life* the properties of **ionic substances in solution**, **ionic equations** and the **bonding in ionic, covalent and metallic substances** are studied. Next in *The Ozone Story*, **temporary and permanent dipoles** between molecules are studied in the context of haloalkanes, branching of alkanes and halogens. Further on in *The Ozone Story*, **hydrogen bonds** are studied in various contexts, including the properties of the hydrogen halides and alcohols. Next, *Polymers and Life* introduces the **bonding in protein structures**, leading on to **molecular recognition** in enzyme active sites. Finally, in *Colour By Design*, many aspects of structure and properties are summarised in the study of bonding dyes to fibres, covering **ionic, covalent, hydrogen and the dipole bonds**.

Summary of content by Storyline

AS Topics / First year A Level Topics	Second year A Level topics
Elements of life (EL) atomic structure, atomic spectra and electron configurations fusion reactions mass spectrometry and isotopes the periodic table and Group 2 chemistry bonding and the shapes of molecules chemical equations and amount of substance (moles) ions: formulae, charge density, tests synthesis of soluble and insoluble salts titrations and titration calculations	**The chemical industry (CI)** aspects of nitrogen chemistry kinetics equilibrium and equilibrium constant calculations effects of factors on the rate and equilibrium yields of reactions; consideration of the best conditions for an industrial process analysis of costs, benefits and risks of industrial processes
Developing fuels (DF) thermochemistry organic chemistry: names and combustion of alkanes, alkenes, alcohols heterogeneous catalysis reactions of alkenes addition polymers electrophilic addition gas volume calculations shapes of organic molecules, σ- and π-bonds structural and *E/Z* isomers dealing with polluting gases	**Polymers and life (PL)** condensation polymers organic functional groups amines and amides acid–base equilibria amino acid and protein chemistry optical isomerism enzyme catalysis and molecular recognition the structure and function of DNA and RNA structural analysis
Elements from the sea (ES) halogen chemistry redox chemistry and electrolysis equilibrium and equilibrium constant atom economy	**Oceans (O)** dissolving and associated enthalpy changes the greenhouse effect acid–base equilibria and pH solubility products entropy

AS Topics / First year A Level Topics	Second year A Level topics
The ozone story (OZ) composition by volume of gases the electromagnetic spectrum and the interaction of radiation with matter rates of reaction radical reactions intermolecular bonding haloalkanes nucleophilic substitution reactions the sustainability of the ozone layer	**Developing metals (DM)** redox titrations cells and electrode potentials d-block chemistry colorimetry
What's in a medicine (WM) the chemistry of the –OH group, phenols and alcohols carboxylic acids and esters mass spectrometry and IR spectroscopy organic synthesis, preparative techniques and thin layer chromatography green chemistry	**Colour by design (CD)** the chemical origins of colour in organic compounds aromatic compounds and their reactions dyes and dyeing diazonium compounds fats and oils gas–liquid chromatography carbonyl compounds and their reactions organic synthesis and polyfunctional compounds

Content in OCR Chemistry B not in Eduqas Chemistry:

- fragmentation patterns in mass spectrometry
- relating global warming to IR absorption by greenhouse gases
- Gas chromatography-mass spectrometry
- decomposition of group 2 carbonates
- properties and preparation of hydrogen halides
- EDTA as a commonly used hexadentate ligand
- addition of ammonia to metal hydroxide precipitates
- reaction of carboxylic acids with metals
- cracking of hydrocarbons
- sulfonation of aromatics
- Friedel-Crafts acylation
- ester hydrolysis
- ozone depletion

- structure and properties of fats and oils
- positive and negative implications for biodiesel use
- recognising and naming acid anhydrides
- environmental consequences of the disposal of plastics
- pharmacological activity of compounds
- spontaneous and feasible changes
- catalyst poisoning
- consideration of conditions for industrial processes involving equilibria
- rusting and prevention (electrochemical explanations)

Content in Eduqas Chemistry not in OCR Chemistry B:

- column chromatography
- reduction of aromatic nitro compounds
- reduction of nitriles
- formation of secondary amines from amines
- reduction of carbonyl compounds to form alcohols
- reaction of carbonyl compounds with 2,4-DNP
- formation of acyl chlorides from carboxylic acids
- decarboxylation
- aromatic carboxylic acid formation by oxidation
- fermentation
- formation of alkenes from haloalkanes
- reaction of haloalkanes with cyanide ions
- hydrolysis of nitriles
- reaction of phenol with bromine
- testing for a methyl carbonyl group
- using plane-polarised light to identify optical isomers
- using intermolecular forces and packing to explain boiling points of alkanes
- Born-Haber cycles
- partial pressures and K_p
- effect on concentration on the value of K_c
- pH curves
- hydrogen fuel cells

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

Assessment – AS Level

OCR Chemistry B (Salters) (H033)	Eduqas (B410QA)
AS Paper 1: Foundations of chemistry **All teaching modules** 70 marks, 50% of AS Level Written paper – 1 hour 30 minutes Section A: multiple choice questions, 20 marks. Section B: includes short answer question styles (structured questions, problem solving, calculations, practical) and extended response questions, 50 marks.	**AS Paper 1: The language of chemistry, structure of matter and simple reactions: Sections C1.1-C1.7** 80 marks , 50% of AS Level Written paper – 1 hour 30 minutes Section A: short answer questions, 10 marks. Section B: structured and extended answer questions set in a range of contexts, 70 marks.
AS Paper 2: Chemistry in depth **All teaching modules** 70 marks, 50% of AS Level Written paper – 1 hour 30 minutes Includes short answer (structured questions, problem solving, calculations, practical) and extended response questions, including those marked using Level of Response mark schemes.	**AS Paper 2: Energy, Rate and Chemistry of Carbon Compounds** 80 marks, 50% of AS Level Written paper – 1 hour 30 minutes Section A: short answer questions, 10 marks. Section B: structured and extended answer questions set in a range of contexts, 70 marks.

Assessment – A Level

OCR Chemistry B (Salters) (H433)	Eduqas (A410QS)
A Level Paper 1: Fundamentals of chemistry: All teaching modules 110 marks, 41% of A Level Written paper – 2 hours 15 minutes Section A: multiple choice questions, 30 marks. Section B: includes short answer question styles (structured questions, problem solving, calculations, practical) and extended response questions, 80 marks	**A Level Paper 1: Physical and Inorganic Chemistry: Sections C1–C3 and PI1–PI5** 120 marks, 40% of A Level Written paper – 2 hours 30 minutes Section A: Short answer questions, 15 marks. Section B: structured and extended answer questions set in a range of theoretical, practical and other contexts, 105 marks.
A Level Paper 2: Scientific literacy in chemistry: All teaching modules 100 marks, 37% of A Level Written paper – 2 hours 15 minutes A particular emphasis is placed on scientific literacy and the exam paper includes a pre-release Advance Notice article worth 20 to 25 marks. Question styles include short answer (structured questions, problem solving, calculations, practical) and extended response questions.	**A Level Paper 2: Organic Chemistry and Analysis: Sections C1–C3 and OA1-OA4** 120 marks, 40% of A Level Written paper – 2 hours 30 minutes Section A: Short answer questions, 15 marks. Section B: structured and extended answer questions set in a range of theoretical, practical and other contexts, 105 marks.

OCR Chemistry B (Salters) (H433)	Eduqas (A410QS)
A Level Paper 3: Practical skills in chemistry: All teaching modules 60 marks, 22% of A Level Written paper – 1 hour A particular emphasis is placed on practical skills and the exam paper includes a practical insert. Question styles include short answer (structured questions, problem solving, calculations, practical) and extended response questions.	**A Level Paper 3: Chemistry in Practice: All sections** 60 marks, 20% of A Level Written paper – 1 hours 15 minutes Structured and extended answer questions with an emphasis on practical contexts and applications.
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.	**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.

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 Eduqas A Level Chemistry qualification, your A Level learners studying OCR Chemistry B (Salters) 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 B (Salters) 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. We also have a lesson planning support document that links the sections of the specification to our delivery guides and further guidance, and includes suggested teaching hours.
3. Speak to your exams officer to get a login for our secure extranet, Interchange – this 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.

