

GCE in Chemistry 2008: AQA

Specifications offered:

GCE Chemistry (AS/A)

Rationale:

This specification has been designed to follow on from Core and Additional Science at GCSE, and to develop a candidate's knowledge and understanding to provide a pathway to further study. The specification builds on the concepts of *How Science Works* that are introduced at GCSE, and aims to ensure relevance to contemporary issues.

The new model follows the key themes of the former AQA specification, updated in line with the 2006 QCA Science criteria.

The Practical Skills Assessment (PSA) means that teachers can, for the first time, credit candidates for work done in routine class practicals. Assessment thus becomes linked to the work of the course, and moves away from formulaic testing. The external assessment time is reduced to three hours at AS and three and a half hours at A2.

Overview of Content and Assessment Models

Specification	Content	Assessment Model
AS	<p>Unit 1 – Foundation Chemistry This module explores the fundamental principles that form the basis of Chemistry.</p> <ul style="list-style-type: none">• Atomic Structure• Amount of Substance• Bonding• Periodicity• Introduction to Organic Chemistry• Alkanes <p>Unit 2 – Chemistry in Action This unit introduces more of the principles that underpin chemistry and looks at the applications of these principles and those that have been developed in Unit 1</p> <ul style="list-style-type: none">• Energetics• Kinetics• Equilibria• Redox Reactions• Group 7, the Halogens• Group 2, the Alkaline Earth Metals• Extraction of Metals• Haloalkanes• Alkenes• Alcohols• Analytical Techniques	<p>Unit 1 – Externally marked, written paper lasting 1 ¼ hours, comprising 4 - 5 short answer, and 1 longer structured question.</p> <p><i>[70 marks]</i></p> <p><i>[33 ⅓ % of total AS marks]</i> <i>[16 ⅔ % of total A-level marks]</i></p> <p>Available January and June (from January 2009).</p> <p>Unit 2 – Externally marked, written paper lasting 1 ¾ hours, comprising 6 - 8 short answer, and 2 longer structured questions.</p> <p><i>[100 marks]</i></p> <p><i>[46 ⅔ % of total AS marks]</i> <i>[23 ⅓ % of total A-level marks]</i></p> <p>Available June only (from June 2009).</p>

Continued

Specification	Content	Assessment Model
	<p>Unit 3 – Investigative and Practical Skills in AS Chemistry Candidates carry out experimental and investigative activities set in contexts appropriate to, and reflecting the demand of, the AS content. Candidates use their knowledge and understanding of Chemistry in planning, carrying out, analysing and evaluating their work.</p>	<p>Unit 3 – Centre Assessed Unit <i>[50 marks]</i> Consisting of: ISA Investigative Skills Assignment Candidates undertake practical work following an AQA task sheet, collect and process data and use it to answer questions in a written test. <i>[38 marks]</i> PSA Practical Skills Assessment Designed to credit candidates for the practical work they undertake naturally as part of the course. Candidates are assessed on their ability to follow and undertake certain standard practical activities across the three areas of Chemistry; Inorganic, Organic and Physical <i>[12 marks]</i></p> <p><i>[20 % of total AS marks]</i> <i>[10 % of total A-level marks]</i></p> <p>Available June only (from June 2009).</p>
A2	<p>Unit 4 – Kinetics, Equilibria and Organic Chemistry This module develops the concepts of physical chemistry introduced at AS. The study of organic chemistry is extended to include compounds containing the carbonyl group, aromatic compounds, amines, amino acids and polymers.</p> <ul style="list-style-type: none"> • Kinetics • Equilibria • Acids and Bases • Nomenclature and Isomerism in Organic Chemistry • Compounds Containing the Carbonyl Group • Aromatic Chemistry • Amines • Amino Acids • Polymers • Organic Synthesis and Analysis • Structure Determination <p>Unit 5 – Energetics, Redox, and Inorganic Chemistry This module covers aspects of physical and inorganic chemistry.</p> <ul style="list-style-type: none"> • Thermodynamics • Periodicity • Redox Equilibria • Transition Metals • Reactions of Inorganic Compounds in Aqueous Solution 	<p>Unit 4 – Externally marked, written paper, lasting 1 ¾ hours, comprising 6 - 8 short answer, and 2 longer structured questions. Some synoptic elements. <i>[100 marks]</i> <i>[20 % of total A-level marks]</i> Available January and June (from January 2010).</p> <p>Unit 5 – Externally marked, written paper, lasting 1 ¾ hours, comprising 5 - 7 short answer, and 3 longer structured questions. Some synoptic elements. <i>[100 marks]</i> <i>[20 % of total A-level marks]</i> Available January and June (from January 2010).</p>

Continued

Specification	Content	Assessment Model
	<p>Unit 6 – Investigative and Practical Skills in A2 Chemistry Candidates carry out experimental and investigative activities set in contexts appropriate to, and reflecting the demand of, the A2 content. Candidates use their knowledge and understanding of Chemistry in planning, carrying out, analysing and evaluating their work.</p>	<p>Unit 6 – Centre Assessed Unit <i>[50 marks]</i> Consisting of: ISA Investigative Skills Assignment Candidates undertake practical work following an AQA task sheet, collect and process data and use it to answer questions in a written test. <i>[38 marks]</i> PSA Practical Skills Assessment Designed to credit candidates for the practical work they undertake naturally as part of the course. Candidates are assessed on their ability to follow and undertake certain standard practical activities across the three areas of Chemistry; Inorganic, Organic and Physical <i>[12 marks]</i> <i>[10 % of total A-level marks]</i> Available June only (from June 2010).</p>

GCE in Chemistry 2008: Edexcel

Specifications offered:

GCE Chemistry (AS/A)

Rationale:

Edexcel are offering a single GCE specification, drawing on the strengths of the former Edexcel and Nuffield Chemistry specifications.

The content in this specification includes the fundamental key concepts needed for progression into higher education and employment. It has, however, been streamlined to allow students enough time to study the units in depth. This is to ensure that the teaching and learning experience is enjoyable. The specification is also designed to enable motivating contemporary chemistry contexts to be included in the teaching and learning programme. These contexts are given as examples within the units so they can be updated or expanded upon by teachers over the lifetime of the qualification.

The Edexcel specification contains practical activities embedded within each unit, to reflect the nature of chemistry. It is designed to increase students' enjoyment and understanding of chemistry whilst providing them with the skills needed to study science at higher levels.

Overview of Content and Assessment Models

Specification	Content	Assessment Model
AS	Unit 1 – The Core Principles of Chemistry This unit provides opportunities for students to develop basic chemical skills. Students also learn to define, measure and calculate enthalpy changes; study atomic structure, including s, p, and d orbitals; explore the three types of strong chemical bonding; and study the chemistry of alkanes and alkenes. <ul style="list-style-type: none">• Formulae, equations and amounts of substance• Energetics• Atomic structure and the Periodic Table• Bonding• Introductory organic chemistry	Unit 1 – Externally marked, written paper, lasting 1hr 15min, comprising: Section A - objective test questions Section B - short answer and extended answer questions, including questions on the analysis and evaluation of practical work. <i>[80 marks]</i> <i>[40 % of total AS marks]</i> <i>[20 % of total A-level marks]</i> Available January and June (from January 2009)
	Unit 2 – Application of Core Principles of Chemistry This unit explores chemical bonding; the chemistry of Groups 2 and 7, including redox reactions; the rate, direction and extent of chemical change; and the chemistry of alcohols and halogenoalkanes, including the mechanisms of selected examples. <ul style="list-style-type: none">• Shapes of molecules and ions• Intermediate bonding and polarity• Intermolecular forces• Redox• The Periodic Table – Groups 2 and 7• Kinetics• Chemical equilibria• Organic chemistry• Mechanisms• Mass spectra and IR• Green chemistry	Unit 2 – Externally marked, written paper, lasting 1hr 15min, comprising: Section A - objective test questions Section B - short answer and extended answer questions Section C – extended answer questions on contemporary contexts, focusing on the chemistry behind the contexts and not a comprehension exercise. <i>[80 marks]</i> <i>[40 % of total AS marks]</i> <i>[20 % of total A-level marks]</i> Available January and June (from January 2009)

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Specification	Content	Assessment Model
	<p>Unit 3 – Chemistry Laboratory Skills I This unit contains practical assessments that cover the content of Units 1 and 2. Students' laboratory skills will be tested in four different ways, through four separate activities.</p>	<p>Unit 3 – Internally assessed unit [50 marks] Consisting of four separate activities testing students' laboratory skills.</p> <p>Activity a – General Practical Competence An assessment of students' manipulative skills over the whole year, covering the three areas of physical, organic and inorganic chemistry. Not externally moderated. [8 marks]</p> <p>Activity b – Qualitative observation [14 marks] Activity c – Quantitative measurement [14 marks] Activity d – Preparation [14 marks]</p> <p>In each case (except Activity a) complete one activity from a selection provided by Edexcel.</p> <p>[20 % of total AS marks] [10 % of total A-level marks]</p> <p>Available June only (from June 2009)</p>
A2	<p>Unit 4 – General Principles of Chemistry I – Rates, Equilibria and Further Organic Chemistry This unit includes the quantitative study of chemical kinetics; organic reaction mechanisms; entropy and equilibria; and the chemistry of carbonyl compounds, carboxylic acids and derivatives. Students are required to apply their knowledge gained in Units 1 and 2, to all aspects of this unit.</p> <ul style="list-style-type: none"> • How fast? – rates • How far? – entropy • Equilibria • Application of rates and equilibrium • Acid/base equilibria • Further organic chemistry • Spectroscopy and chromatography <p>Unit 5 – General Principles of Chemistry II – Transition metals and Organic Nitrogen Chemistry Students study further chemistry related to redox and transition metals, building on work carried out in Unit 2. The organic chemistry section focuses on arenes and organic nitrogen compounds such as amines, amides, amino acids and proteins. Students are expected to use their prior knowledge that they have gained over the whole GCE in Chemistry.</p> <ul style="list-style-type: none"> • Redox and the chemistry of the transition metals • Organic chemistry – arenes, nitrogen compounds and synthesis 	<p>Unit 4 – Externally marked, written paper, lasting 1hr 40min, comprising: Section A - objective test questions Section B - short answer and extended answer questions. Includes stretch and challenge questions. Section C - data questions, with use of data booklet. Includes stretch and challenge questions. This paper includes synoptic assessment.</p> <p>[90 marks] [40 % of total A2 marks] [20 % of total A-level marks]</p> <p>Available January and June (from January 2010)</p> <p>Unit 5 – Externally marked, written paper, lasting 1hr 40min, comprising: Section A - objective test questions Section B - short answer and extended answer questions. Includes questions on the analysis and evaluation of practical work. Includes stretch and challenge questions. Section C – extended answer questions on contemporary contexts, focusing on the chemistry behind the contexts and not a comprehension exercise. Includes stretch and challenge questions. This paper includes synoptic assessment.</p> <p>[90 marks] [40 % of total A2 marks] [20 % of total A-level marks]</p> <p>Available January and June (from January 2010)</p>

Specification	Content	Assessment Model
	<p>Unit 6 – Chemistry Laboratory Skills II This unit contains practical assessments that cover the content of Units 4 and 5. Students' laboratory skills will be tested in four different ways, and there is a choice in how these can be delivered.</p>	<p>Unit 6 – Internally assessed unit <i>[50 marks]</i> Consisting of four separate activities testing students' laboratory skills.</p> <p>Activity a – General Practical Competence An assessment of students' manipulative skills over the whole year, covering the three areas of physical, organic and inorganic chemistry. Not externally moderated. <i>[8 marks]</i></p> <p>Activity b – Qualitative observation. <i>[14 marks]</i></p> <ul style="list-style-type: none"> • Pathway 1 <p>Activity c – Quantitative measurement. <i>[14 marks]</i></p> <p>Activity d – Preparation. <i>[14 marks]</i></p> <ul style="list-style-type: none"> • Pathway 2 <p>Activities c and d – A multi-stage experiment including quantitative measurement and preparation. <i>[28 marks]</i></p> <p>In each case (except Activity a) complete one activity from a selection provided by Edexcel.</p> <p><i>[20 % of total A2 marks]</i> <i>[10 % of total A-level marks]</i></p> <p>Available June only (from June 2010)</p>

GCE in Chemistry 2008: OCR

Specifications offered:

GCE Chemistry A (AS/A)
GCE Chemistry B (Salters) (AS/A)

Rationale:

The **Chemistry A** course has been designed to enable centres to deliver the designated units using the framework provided or to design a customised course. This flexible approach is also reflected in the assessment model. The specification is divided into chemical topics, each containing different key concepts of Chemistry. Once the key features of a chemical topic have been developed, applications are considered. For assessment purposes, knowledge and understanding of key concepts are treated separately at AS, while important links between different areas of chemistry are largely assessed synoptically at A2. While teaching of practical skills may be integrated with the theoretical topics, they are assessed separately. This allows skills to be developed in a way suited to each individual centre.

In contrast to the traditional 'topic-based' approach, **Chemistry B (Salters)** is 'context-led'. Chemical concepts are introduced within a relevant context, the course being written as a series of units based on contemporary issues in Chemistry. Students study the chemistry in a spiral way so that chemical ideas, introduced in an early topic, are reinforced later. The 'drip-feed' approach to teaching and learning chemical principles allows candidates to revisit a particular topic several times during the course, each taking their knowledge and understanding a step further.

Overview of Content and Assessment Models

Specification	Content	Assessment Model
Chemistry A AS	Unit 1 – Atoms, Bonds and Groups This unit provides candidates with a knowledge and understanding of atomic structure and the chemical ideas that underpin the study of quantitative chemistry and inorganic chemistry. <ul style="list-style-type: none">• Atoms and Reactions• Electrons, Bonding and Structure• The Periodic Table	Unit 1 – Externally marked, written paper, lasting 1 hr. <i>[60 marks]</i> <i>[30 % of total AS marks]</i> <i>[15 % of total A-level marks]</i> Available January and June (from January 2009).
	Unit 2 – Chains, Energy and Resources This unit provides a foundation for the study of organic chemistry and physical chemistry. It includes issues regarding the applications of organic chemistry to everyday life. <ul style="list-style-type: none">• Basic Concepts and Hydrocarbons• Alcohols, Halogenoalkanes and Analysis• Energy• Resources	Unit 2 – Externally marked, written paper, lasting 1hr 45min. <i>[100 marks]</i> <i>[50 % of total AS marks]</i> <i>[25 % of total A-level marks]</i> Available January and June (from June 2009)
	Unit 3 – Practical Skills in Chemistry I This unit assesses practical and investigative skills developed within contexts encountered during AS Chemistry.	Unit 3 – Internally assessed unit <i>[40 marks]</i> Consisting of three tasks; one each of <ul style="list-style-type: none">• Qualitative task <i>[10 marks]</i>• Quantitative task <i>[15 marks]</i>• Evaluative task <i>[15 marks]</i> chosen from a selection provided by OCR. The evaluative task may be an extension of one of the qualitative or quantitative tasks. Tasks are marked by the centre using a mark scheme provided by OCR. Work is moderated by OCR. <i>[20 % of total AS marks]</i> <i>[10 % of total A-level marks]</i> Available June only (from June 2009).

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Specification	Content	Assessment Model
Chemistry A A2	<p>Unit 4 – Rings, Polymers and Analysis This unit provides candidates with a deeper knowledge and understanding of organic chemistry including amino acids, synthetic condensation polymers and modern analytical techniques for organic chemicals. This unit also includes applications from many areas of employment and everyday life.</p> <ul style="list-style-type: none"> • Rings, Acids and Amines • Polymers and Synthesis • Analysis 	<p>Unit 4 – Externally marked, written paper, lasting 1 hour. This unit contains some synoptic assessment and stretch and challenge questions.</p> <p><i>[60 marks]</i></p> <p><i>[15 % of total A-level marks]</i></p> <p>Available January and June (from January 2010).</p>
	<p>Unit 5 – Equilibria, Energetics and Elements This unit provides candidates with a quantitative study of physical chemistry, and extends the study of energy and periodicity encountered at AS. It also considers ways in which scientists are working to provide cleaner and more efficient energy.</p> <ul style="list-style-type: none"> • Rates, Equilibrium and pH • Energy • Transition Elements 	<p>Unit 5 – Externally marked, written paper, lasting 1hr 45min. This unit contains some synoptic assessment and stretch and challenge questions.</p> <p><i>[100 marks]</i></p> <p><i>[25 % of total A-level marks]</i></p> <p>Available January and June (from June 2010).</p>
	<p>Unit 6 – Practical Skills in Chemistry 2 This unit assesses practical and investigative skills developed within contexts encountered during A level Chemistry.</p>	<p>Unit 6 – Internally assessed unit <i>[40 marks]</i> Consisting of three tasks; one each of</p> <ul style="list-style-type: none"> • Qualitative task <i>[10 marks]</i> • Quantitative task <i>[15 marks]</i> • Evaluative task <i>[15 marks]</i> <p>chosen from a selection provided by OCR. The evaluative task may be an extension of one of the qualitative or quantitative tasks. Mark schemes are provided by OCR. Work is moderated by OCR.</p> <p><i>[10 % of total A-level marks]</i></p> <p>Available June only (from June 2010).</p>

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Specification	Content	Assessment Model
<p>Salters AS</p>	<p>Unit 1 – Chemistry for Life This unit includes a study of elements and compounds in the universe, the solar system and the human body, and a study of fuels and the contribution that chemists make to the development of better fuels.</p> <ul style="list-style-type: none"> • (EL) Elements of Life • (DF) Developing Fuels <p>Unit 2 – Chemistry of Natural Resources This unit includes a study of the extraction of halogens from minerals in the sea; the properties and uses of Group 7 elements and their compounds; important chemical processes occurring in the atmosphere – the ozone layer and the greenhouse effect; and the development of addition polymers.</p> <ul style="list-style-type: none"> • (ES) Elements from the sea • (A) The Atmosphere • (PR) Polymer Revolution <p>Unit 3 – Chemistry in Practice Five practical skills are assessed by the teacher. One skill requires the wide-ranging assessment of ability to work competently over a range of different practical areas.</p>	<p>Unit 1 – Externally marked, written paper, lasting 1hr 15min. Questions are set in familiar or unfamiliar contexts. Approximately 10 % of the marks are for extended writing.</p> <p><i>[60 marks]</i></p> <p><i>[30 % of total AS marks]</i> <i>[15 % of total A-level marks]</i></p> <p>Available January and June (from January 2009).</p> <p>Unit 2 – Externally marked, written paper, lasting 1hr 45min. Questions are set in familiar or unfamiliar contexts. Approximately 10 % of the marks are for extended writing. One question will be on an Advance Notice article which will be available to centres via OCR Interchange and will be included as an insert with the question paper.</p> <p><i>[100 marks]</i></p> <p><i>[50 % of total AS marks]</i> <i>[25 % of total A-level marks]</i></p> <p>Available January and June (from June 2009).</p> <p>Unit 3 – Internally assessed unit <i>[60 marks]</i> Candidates are assessed in five skill areas: Skill I Competence <i>[12 marks]</i> Skill II Measurement <i>[12 marks]</i> Skill III Analysis and Evaluation <i>[12 marks]</i> Skill IV Observation <i>[12 marks]</i> Skill V Interpretation <i>[12 marks]</i> Skill I is assessed over a period of time using at least 6 different activities. Skills II, III, IV, and V may be assessed in separate activities or together in two separate activities. Activities and mark schemes are provided by OCR. Work is moderated by OCR.</p> <p><i>[20 % of total AS marks]</i> <i>[10 % of total A-level marks]</i></p> <p>Available June only (from June 2009).</p>
<p>Salters A2</p>	<p>Unit 4 – Chemistry in Materials This unit includes a study of medicines, such as aspirin; condensation polymers and other modern materials; proteins and enzymes; DNA and its use in synthesising proteins; and the production, properties and uses of steel.</p> <ul style="list-style-type: none"> • (WM) What's in a Medicine? • (MR) The Materials Revolution • (TL) The Thread of Life • (SS) Steel Story 	<p>Unit 4 – Externally marked, written paper, lasting 1hr 30min. Questions are set in familiar or unfamiliar contexts. Approximately 10 % of the marks are for extended writing. This unit is synoptic.</p> <p><i>[90 marks]</i></p> <p><i>[15 % of total A-level marks]</i></p> <p>Available January and June (from January 2010).</p>

Specification	Content	Assessment Model
	<p>Unit 5 – Chemistry by Design This unit includes a study of industrial processes and food supply; the chemical basis of colour in pigments and paints; the importance of the oceans to life on Earth; and the design of pharmaceutical substances to meet specific needs.</p> <ul style="list-style-type: none"> • (AI) Agriculture and Industry • (CD) Colour by Design • (O) The Oceans • (MD) Medicines by Design <p>Unit 6 – Chemistry Individual Investigation Candidates carry out a single individual investigation of their choice, taken from any aspect of chemistry. Practical work is expected to take about 18 hours, and an appropriate amount of time both before and after this period should be spent preparing for and using the results of their investigation.</p>	<p>Unit 5 – Externally marked, written paper, lasting 2 hours. Questions are set in familiar or unfamiliar contexts. Approximately 20 % of the marks are for extended writing. This unit is synoptic.</p> <p><i>[120 marks]</i></p> <p><i>[20 % of total A-level marks]</i></p> <p>Available January and June (from June 2010).</p> <p>Unit 6 – Internally assessed unit. <i>[45 marks]</i> Candidates are assessed in 8 skill areas: A – Chemical Ideas <i>[6 marks]</i> B – Methods <i>[6 marks]</i> C – Communication <i>[5 marks]</i> D – Observations and measurements <i>[6 marks]</i> E – Analysis and interpretation <i>[6 marks]</i> F – Evaluation <i>[6 marks]</i> G – Manipulation <i>[5 marks]</i> H – Demand <i>[5 marks]</i> Teachers award marks using generic criteria. Quality of written communication is also assessed. Work is moderated by OCR.</p> <p><i>[15 % of total A-level marks]</i></p> <p>Available June only (from June 2010).</p>

GCE in Chemistry 2008: WJEC

Specifications offered:

GCE Chemistry (AS/A)

Rationale:

The specification as a whole encourages candidates to understand that chemistry is concerned with the exploitation of the Earth's resources in the production of energy and new materials, by the control and use of chemical reactions. Understanding the behaviour of materials allows chemists to design new materials for specific uses. In these respects, chemistry plays a vital role in providing an enhanced quality of life.

Inevitably the application of many new developments in chemistry will give rise to consideration of ethical, social, cultural and environmental issues. There is a growing awareness within the subject of the need to build sustainability into the development of chemical processes, and this need is exemplified through the development of ideas concerning Green Chemistry.

Overview of Content and Assessment Models

Specification	Content	Assessment Model
AS	<p>Unit 1 – Controlling and measuring chemical change This unit explores some fundamental ideas about atoms, and the mole, and covers the key principles of equilibrium, energy changes and rates.</p> <ul style="list-style-type: none">• Basic ideas about atoms• Chemical calculations• Chemical equilibrium and acid-base reactions• Energetics• Kinetics• Application of the principles studied in unit 1 to problems encountered in the production of chemicals and of energy <p>Unit 2 – Properties, structure and bonding This unit covers the structure and bonding, properties, and uses of materials and the relationship between these factors. The unit also includes an introduction to organic chemistry.</p> <ul style="list-style-type: none">• Chemical bonding• Forces between molecules, and shapes of molecules• Solubility of compounds in water• Solid structures• The Periodic Table and trends in the properties of the elements of the s-block and Group 7• Organic compounds and their reactions• Hydrocarbons, Halogenoalkanes, and Alcohols• Analytical techniques	<p>Unit 1 – Externally assessed, written paper, lasting 1hr 30min, comprising: Section A - objective questions Section B - structured questions</p> <p><i>[80 marks]</i></p> <p><i>[40 % of total AS marks]</i> <i>[20 % of total A-level marks]</i></p> <p>Available January and June (from January 2009).</p> <p>Unit 2 – Externally marked, written paper, lasting 1hr 30min, comprising: Section A - objective questions Section B - structured questions</p> <p><i>[80 marks]</i></p> <p><i>[40 % of total AS marks]</i> <i>[20 % of total A-level marks]</i></p> <p>Available January and June (from June 2009).</p>

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Specification	Content	Assessment Model
	<p>Unit 3 – AS Practical Chemistry Candidates undergo two assessments of their ability in practical chemistry. Practical activities are carried out at centres at a time of their choice.</p>	<p>Unit 3 – Internally assessed unit Two exercises devised by centres and approved or selected from a list of exemplars. Work is marked by the centre or by WJEC. Each task carries 30 raw marks, and must be marked according to a mark scheme devised or approved by WJEC.</p> <p><i>[60 marks]</i></p> <p><i>[20 % of total AS marks]</i> <i>[10 % of total A-level marks]</i></p> <p>Available June only (from June 2009).</p>
A2	<p>Unit 4 – Analysing and building molecules This unit builds on the foundation ideas of spectroscopy and basic organic chemistry introduced at AS. It also explores the use of these topics in structure elucidation, synthesis, and industrial and environmental applications.</p> <ul style="list-style-type: none"> • Spectroscopy • Isomerism and aromaticity • Alcohols and phenol • Aldehydes and ketones • Carboxylic acid and derivatives • Organic compounds containing nitrogen • Organic synthesis and analysis • The process of how science works <p>Unit 5 – A level physical and inorganic chemistry This unit develops the ideas of redox, kinetics, energy changes and equilibria.</p> <ul style="list-style-type: none"> • Redox and standard electrode potential • Redox reactions and applications • Chemistry of the p-block • d-block transition elements • Chemical kinetics • Enthalpy changes for solids and solutions • Entropy and feasibility of reactions • General equilibria • Acid-base equilibria <p>Unit 6 – A2 Practical Chemistry Candidates undergo two assessments of their ability in practical chemistry. The activities will include opportunities to draw together knowledge, understanding and skills from across the full AS/A specification in a synoptic manner. Practical activities are carried out at centres at a time of their choice.</p>	<p>Unit 4 – Externally marked, written paper, lasting 1hr 45min, comprising: Section A – 3 structured questions, 1 based on a short passage <i>[40 marks]</i> Section B - 2 extended answer questions <i>[20 marks each]</i> Synoptic assessment is included.</p> <p><i>[80 marks]</i></p> <p><i>[20 % of total A-level marks]</i></p> <p>Available January and June (from January 2010).</p> <p>Unit 5 – Externally marked, written paper, lasting 1hr 45min, comprising: Section A – 3 structured questions, 1 based on a short passage <i>[40 marks]</i> Section B - 2 extended answer questions <i>[20 marks each]</i> Synoptic assessment included</p> <p><i>[60 marks]</i></p> <p><i>[20 % of total A-level marks]</i></p> <p>Available June only (from June 2010).</p> <p>Unit 6 – Internally assessed unit Two exercises devised by centres and approved or selected from a list of exemplars. Synoptic assessment included. Work is marked by the centre or by WJEC. Each task carries 30 raw marks, and must be marked according to a mark scheme devised or approved by WJEC.</p> <p><i>[60 marks]</i></p> <p><i>[10 % of total A-level marks]</i></p> <p>Available June only (from June 2010).</p>

GCE in Chemistry 2008: CCEA

Specifications offered:

GCE Chemistry (AS/A)

Rationale:

This specification builds on the broad objectives of the revised Northern Ireland Curriculum. It is also relevant to key curriculum concerns in England and Wales. It adheres to the 2006 Subject Criteria for AS and Advanced GCE Chemistry, published by QCA.

This specification has been designed to develop students' interest in and enthusiasm for Chemistry, including developing an interest in further study and careers in the subject. The course explores how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society. Students are encouraged to develop and demonstrate a deeper appreciation of the skills, knowledge and understanding of how science works, and develop essential knowledge and understanding of different areas of the subject and how they relate to each other.

Compared to CCEA's previous specification, there is less time spent on written examinations, and questions that are less structured provide stretch and challenge. The specification content and also the contexts set in examination questions address contemporary chemistry issues.

Overview of Content and Assessment Models

Specification	Content	Assessment Model
AS	Unit 1 – Basic Concepts in Physical and Inorganic Chemistry Basic calculations and equations are an integral unit of this module. <ul style="list-style-type: none">• Formulae, equations and amounts of substance• Atomic structure• Bonding and structure• Shapes of molecules and ions• Intermolecular forces• Redox• The Periodic Table• Group 7• Titrations	Unit 1 – Externally marked, written paper, lasting 1hr 30min, comprising: Section A - 10 multiple choice questions [20 marks] Section B - structured questions [80 marks] [100 marks] [35 % of total AS marks] [17.5 % of total A-level marks] Available January and Summer (from January 2009).
	Unit 2 – Further Physical and Inorganic Chemistry and Introduction to Organic Chemistry This module covers organic chemistry, a qualitative introduction to equilibrium and kinetics, and analytical chemistry. Thermochemistry is covered in some depth. There is also further work on basic calculations. <ul style="list-style-type: none">• Formulae and amounts of a substance• Nomenclature and isomerism inorganic compounds• Hydrocarbons – alkanes and alkenes• Halogenoalkanes and alcohols• Infra-red spectroscopy• Energetics, Equilibrium and Kinetics• Group 2 elements and their compounds• Qualitative analysis	Unit 2 – Externally marked, written paper, lasting 1hr 30min, comprising: Section A - 10 multiple choice questions [20 marks] Section B - structured questions [80 marks] [100 marks] [35 % of total AS marks] [17.5 % of total A-level marks] Available January and Summer (from Summer 2009).

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Specification	Content	Assessment Model
	<p>Unit 3 – Internal Assessment This unit is timetabled and taken by candidates under controlled conditions. The practical exercises test students' skills in manipulation, measuring, recording and planning.</p>	<p>Unit 3 – Internally assessed papers, lasting 2hr 30min, comprising: Section A – 2 practical tasks [25 and 29 marks] Section B – Planning exercise [20 marks], and questions testing knowledge of practical techniques, observations and calculations [16 marks]. Papers are set by CCEA, and marked by the centre to a mark scheme supplied by CCEA.</p> <p>[90 marks]</p> <p>[30 % of total AS marks] [15 % of total A-level marks]</p> <p>Available summer only (from Summer 2009).</p>
A2	<p>Unit 4 – Periodic Trends and Further Organic, Physical and Inorganic Chemistry This unit develops students' knowledge and understanding of equilibrium, kinetics, and organic chemistry. Lattice enthalpy, entropy, periodic trends and environmental chemistry are also studied.</p> <ul style="list-style-type: none"> • Lattice enthalpy • Enthalpy, entropy and free energy • Kinetics • Equilibrium (inc. principles from Unit 2) • Acid-base equilibria • Isomerism (inc. examples from Unit 2) • Aldehydes and ketones • Carboxylic acids • Esters, fats and oils • Periodic trends • Environmental chemistry <p>Unit 5 – Analytical, Transition Metals, Electrochemistry and Further Organic Chemistry Analytical chemistry is developed in this unit, while the inorganic chemistry studied is based mainly on transition metals, and organic nitrogen compounds form the backbone of the work on organic chemistry.</p> <ul style="list-style-type: none"> • Mass spectrometry • NMR spectroscopy • Volumetric analysis • Colorimetry • Chromatography • Transition metals; properties, complexes, oxidation states, catalytic behaviour, application of transition metal complexes, electrode potentials. • Arenes, amines, amides, amino acids • Polymer chemistry 	<p>Unit 4 – Externally marked, written paper, lasting 2 hours, comprising: Section A - 10 multiple choice questions [20 marks] Section B - structured questions [100 marks] Includes synoptic assessment and stretch and challenge questions.</p> <p>[120 marks]</p> <p>[40 % of total A2 marks] [20 % of total A-level marks]</p> <p>Available January and Summer (from January 2010).</p> <p>Unit 5 – Externally assessed, written paper, lasting 2 hours, comprising: Section A - 10 multiple choice questions [20 marks] Section B - structured questions [100 marks] Includes synoptic assessment, and stretch and challenge questions.</p> <p>[120 marks]</p> <p>[40 % of total A2 marks] [20 % of total A-level marks]</p> <p>Available Summer only (from Summer 2010).</p>

Continued

Specification	Content	Assessment Model
	<p>Unit 6 – Internal Assessment This unit is timetabled and taken by candidates under controlled conditions. The practical exercises test students' skills of manipulation, measuring, recording, concluding and communicating.</p>	<p>Unit 6 – Internally assessed paper, lasting 2hr 30mins, comprising: Practical examination consisting of a planning exercise <i>[20 marks]</i> and practical exercises <i>[50 marks]</i> Papers are set by CCEA, and marked by the centre to a mark scheme supplied by CCEA.</p> <p><i>[70 marks]</i></p> <p><i>[20 % of total A2 marks]</i> <i>[10 % of total A-level marks]</i></p> <p>Available Summer only (from Summer 2010).</p>