Beths Grammar School

KS4 Curriculum Map - Year 11 Chemistry

Academic Year 2026-2027 | One 100-minute Chemistry lesson each week | OCR GCSE Chemistry A J248

Curriculum intent. Year 11 completes OCR Gateway Chemistry content from C5.1 to C6.3. The first week of September contains no Year 11 Chemistry lesson, so the sequence begins in the week commencing 7 September 2026. Twenty-five potential weekly lessons are available before the end of Spring term. All new content is completed by Thursday 25 March 2027. Summer teaching is reserved for cumulative C1-C6 revision, practical recall, examination practice and targeted intervention.

1. Executive Calendar and Curriculum Overview

Element	Allocation	Planning implication
Lesson duration/frequency	One 100-minute lesson weekly	39 potential weeks after first September week is removed.
Pre-Easter capacity	25 potential weekly lessons	C5.1-C6.3, assessment and DIRT must fit before 25 March 2027.
Summer capacity	14 potential weekly lessons	No new specification content; revision and public-examination preparation.
Calendar risk	Timetable weekday, events and trial exams not final	The map remains a final draft pending verification.
DIRT model	Feedback, responsive reteaching and transfer in one lesson	No separate responsive-reteaching lesson.

Period	Core content	Progression from Year 10	Leads to	Principal checkpoint
Autumn 1	C5.1 and start C5.2	C3.1 calculations; C4.2 practical analysis	Rates and equilibrium	Quantitative and practical checkpoints
Autumn 2	Complete C5.2 and C5.3	C3.2 energetics and particle model	Industrial chemistry	C5 practice/official test and combined DIRT
Spring 1	C6.1 and start C6.2	C3-C5 applied chemistry and C4 reactivity	Organic and environmental chemistry	Process/materials checkpoints
Spring 2	Complete C6.2 and C6.3	C2.3 carbon/polymers; C6.1 feedstocks	Synoptic GCSE and post-16 readiness	All content complete by 25 March 2027
Summer	C1-C6 revision only	Cumulative Year 9-11 progression	Public examinations	Timed practice and question-level intervention

2. Teaching, Inclusion and Assessment Principles

1. Begin each lesson with retrieval of relevant Year 10 and earlier prerequisite knowledge.

2. Present new material in small steps and move from explicit modelling to guided and independent practice.

3. Protect practical work and explicitly teach planning, recording, analysis and evaluation.

4. Maintain the same ambitious curriculum for all pupils; scaffold language, mathematics and representations.

5. Use teacher-set revision and relevant past-paper Unit Booklets.

6. Combine feedback, DIRT, responsive reteaching and transfer within the same lesson after each official assessment.

7. Use trial-examination and question-level evidence to target Summer revision.

1. C5.1 Monitoring chemical reactions

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
Curriculum period	Prior knowledge and development	Knowledge, rationale and OCR coverage	Pedagogy, misconceptions and inclusion	Outcomes and assessment evidence
Period **1.** Autumn 1	**Progression** **1.** Year 10 C3.1 mole, reacting-mass and equation calculations. **2.** Year 10 C3.3 acids and neutralisation. **3.** Year 10 C4.2 accurate observation and analytical methods.	**Substantive knowledge** **1.** Theoretical yield, percentage yield and atom economy. **2.** Selection of reaction pathways using yield, atom economy, rate, equilibrium, energy, safety and cost. **3.** Concentration in g/dm3 and mol/dm3; titration method/calculations; gas calculations. **OCR/textbook mapping** **1.** OCR C5.1.1-C5.1.7; Kerboodle pp.158-173 **A Level links** **1.** H432 2.1.3 Amount of substance. **2.** H432 Module 1 practical skills. **3.** H432 organic synthesis and yield.	**Curriculum enactment** **1.** Model each calculation with units and proportional reasoning. **2.** Complete titration with accurate apparatus, repeat readings and concordant results. **3.** Move from guided calculations to unfamiliar multistep questions. **Misconceptions and fixes** **1.** Theoretical yield is the amount collected -> distinguish predicted maximum from actual yield. **2.** High percentage yield means sustainable -> compare atom economy, waste, energy and raw materials. **3.** cm3 can be used directly in dm3 calculations -> convert explicitly. **4.** More decimal places always mean greater accuracy -> connect precision to apparatus. **Inclusive access** **1.** Pre-teach vocabulary and symbols. **2.** Chunk multistep calculations and processes. **3.** Use worked examples before independent application.	**Students will know and be able to** **1.** Calculate yield, atom economy, concentration and gas volume. **2.** Carry out and evaluate titration. **3.** Evaluate reaction pathways using justified criteria. **Assessment checkpoints** **1.** Diagnostic; calculation checkpoints; titration competency; C5.1 retrieval in cumulative test. **Department response** **1.** Use question-level evidence to locate underlying gaps. **2.** Complete DIRT, responsive reteaching and transfer in one lesson. **3.** Check transfer through a new question.

2. C5.2 Controlling reactions

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
Curriculum period	Prior knowledge and development	Knowledge, rationale and OCR coverage	Pedagogy, misconceptions and inclusion	Outcomes and assessment evidence
Period **1.** Autumn 1-Autumn 2	**Progression** **1.** Year 10 C1.1 particle model. **2.** Year 10 C3.2 energetics and activation energy. **3.** Year 10 practical graphing and evaluation.	**Substantive knowledge** **1.** Rate of reaction and methods for measuring rate. **2.** Effects of temperature, concentration, pressure, particle size and catalysts. **3.** Collision theory, activation energy and interpretation of rate graphs. **OCR/textbook mapping** **1.** OCR C5.2.1-C5.2.5; Kerboodle pp.174-185	**Curriculum enactment** **1.** Use gas-volume or mass-loss practicals. **2.** Model graph interpretation, tangent use and comparisons of initial rate. **3.** Evaluate variables, repeats, anomalies and method limitations. **Misconceptions and fixes** **1.** A catalyst increases final yield -> distinguish rate from equilibrium	**Students will know and be able to** **1.** Explain rate changes precisely. **2.** Interpret rate data and graphs. **3.** Plan and evaluate a rates investigation. **Assessment checkpoints** **1.** Rates practical; graph checkpoint; collision-theory response; official C5 test. **Department response** **1.** Use question-level evidence to locate

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
		A Level links **1.** H432 3.2.2 Qualitative rates. **2.** H432 5.1.1 Quantitative rates. **3.** H432 Module 1 gradients and uncertainty.	composition. **2.** Particles react whenever they collide -> require sufficient energy and orientation. **3.** Temperature only increases collision frequency -> include increased fraction above activation energy. **4.** A steeper graph means more final product -> separate rate from yield. **Inclusive access** **1.** Pre-teach vocabulary and symbols. **2.** Chunk multistep calculations and processes. **3.** Use worked examples before independent application.	underlying gaps. **2.** Complete DIRT, responsive reteaching and transfer in one lesson. **3.** Check transfer through a new question.

3. C5.3 Equilibria

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
Curriculum period	Prior knowledge and development	Knowledge, rationale and OCR coverage	Pedagogy, misconceptions and inclusion	Outcomes and assessment evidence
Period **1.** Autumn 2	**Progression** **1.** Year 10 C3.2 energetics. **2.** C5.2 rates and catalysts. **3.** Year 10 equations and particle representations.	**Substantive knowledge** **1.** Reversible reactions and dynamic equilibrium in closed systems. **2.** Effects of concentration, pressure and temperature on equilibrium position. **3.** Industrial-condition compromises involving rate, yield, cost and safety. **OCR/textbook mapping** **1.** OCR C5.3.1-C5.3.3; Kerboodle pp.186-193 **A Level links** **1.** H432 3.2.3 Qualitative equilibrium. **2.** H432 5.1.2 Kc and quantitative equilibrium. **3.** H432 5.2.2 entropy and free energy.	**Curriculum enactment** **1.** Use particle-level and macroscopic models. **2.** Apply qualitative equilibrium reasoning to unfamiliar changes. **3.** Compare industrial conditions using structured decision-making. **Misconceptions and fixes** **1.** At equilibrium the reaction stops -> forward/reverse rates are equal. **2.** Equal rates mean equal amounts -> concentrations may be unequal but constant. **3.** A catalyst changes equilibrium position -> it changes approach rate only. **4.** Increasing pressure always favours products -> count gaseous particles. **Inclusive access** **1.** Pre-teach vocabulary and symbols. **2.** Chunk multistep calculations and processes. **3.** Use worked examples before independent application.	**Students will know and be able to** **1.** Explain dynamic equilibrium. **2.** Predict qualitative shifts. **3.** Justify industrial compromises. **Assessment checkpoints** **1.** Equilibrium hinge questions; industrial-condition evaluation; included in C5 assessment. **Department response** **1.** Use question-level evidence to locate underlying gaps. **2.** Complete DIRT, responsive reteaching and transfer in one lesson. **3.** Check transfer through a new question.

4. C6.1 Improving processes and products

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
Curriculum period	Prior knowledge and development	Knowledge, rationale and OCR coverage	Pedagogy, misconceptions and inclusion	Outcomes and assessment evidence
Period **1.** Spring 1	**Progression** **1.** Year 10 C3 redox, equations, energetics and electrolysis. **2.** Year 10 C4 reactivity and transition metals. **3.** C5 rates and equilibrium.	**Substantive knowledge** **1.** Fertilisers, laboratory preparation, Haber and Contact processes, and ethanol manufacture. **2.** Extraction of iron/aluminium and biological extraction. **3.** Alloys, corrosion, prevention, materials, composites, choosing materials and recycling. **OCR/textbook mapping** **1.** OCR C6.1.1-C6.1.16; Kerboodle pp.196-229 **A Level links** **1.** H432 equilibrium and industrial chemistry. **2.** H432 5.2.3 redox/electrode potentials. **3.** H432 5.3 transition elements.	**Curriculum enactment** **1.** Use process diagrams, equations and data to compare manufacture. **2.** Link extraction process to reactivity and energy. **3.** Investigate corrosion and evaluate prevention/material choice. **Misconceptions and fixes** **1.** Haber makes ammonia in one pass -> equilibrium conversion and recycling. **2.** Catalyst increases equilibrium yield -> distinguish rate and position. **3.** All metals are extracted by carbon -> apply reactivity/electrolysis. **4.** Recycling is always best -> compare collection, separation, energy and quality. **Inclusive access** **1.** Pre-teach vocabulary and symbols. **2.** Chunk multistep calculations and processes. **3.** Use worked examples before independent application.	**Students will know and be able to** **1.** Explain and evaluate industrial processes. **2.** Select extraction and corrosion-prevention methods. **3.** Compare materials and recycling options. **Assessment checkpoints** **1.** Industrial-process checkpoint; extraction/redox retrieval; corrosion/materials evaluation. **Department response** **1.** Use question-level evidence to locate underlying gaps. **2.** Complete DIRT, responsive reteaching and transfer in one lesson. **3.** Check transfer through a new question.

5. C6.2 Organic chemistry

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
Curriculum period	Prior knowledge and development	Knowledge, rationale and OCR coverage	Pedagogy, misconceptions and inclusion	Outcomes and assessment evidence
Period **1.** Spring 1-Spring 2	**Progression** **1.** Year 9 C2.3 carbon and polymers. **2.** Year 10 C3 formulae/reactions and C3.2 energetics. **3.** C6.1 feedstocks and industrial processes.	**Substantive knowledge** **1.** Alkanes, alkenes, alcohols and carboxylic acids. **2.** Crude oil, fractional distillation and cracking. **3.** Addition, biological and condensation polymers; chemical cells where specified. **OCR/textbook mapping** **1.** OCR C6.2.1-C6.2.10; Kerboodle pp.230-251 **A Level links** **1.** H432 Module 4 organic chemistry. **2.** H432 6.2.3 polymers. **3.** H432 6.2.5 organic synthesis.	**Curriculum enactment** **1.** Model structural, displayed and molecular formulae. **2.** Use bromine-water evidence and link fractions to chain length/boiling point. **3.** Compare addition and condensation polymerisation. **Misconceptions and fixes** **1.** All hydrocarbons are fuels only -> connect to feedstocks. **2.** Cracking breaks only C-H bonds -> track conservation and alkene formation. **3.** Addition polymerisation creates a small molecule -> contrast condensation. **4.** Polymers have one fixed chain length -> discuss repeating units and distributions. **Inclusive access** **1.** Pre-teach vocabulary and symbols. **2.** Chunk multistep calculations and processes. **3.** Use worked examples before independent application.	**Students will know and be able to** **1.** Represent and classify organic compounds. **2.** Explain fractionation, cracking and polymerisation. **3.** Apply tests and reaction knowledge. **Assessment checkpoints** **1.** Formula/reaction checkpoint; polymer comparison; cumulative C6 test. **Department response** **1.** Use question-level evidence to locate underlying gaps. **2.** Complete DIRT, responsive reteaching and transfer in one lesson. **3.** Check transfer through a new question.

6. C6.3 Interpreting and interacting with Earth systems

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
Curriculum period	Prior knowledge and development	Knowledge, rationale and OCR coverage	Pedagogy, misconceptions and inclusion	Outcomes and assessment evidence
Period **1.** Spring 2; complete by 25 March 2027	**Progression** **1.** Year 10 particles, reactions and practical evaluation. **2.** C6.2 fuels and organic feedstocks. **3.** C1-C6 data interpretation and evidence evaluation.	**Substantive knowledge** **1.** Development of the atmosphere. **2.** Sources and effects of atmospheric pollutants. **3.** Greenhouse gases, climate evidence, uncertainty and mitigation. **4.** Potable-water production and treatment. **OCR/textbook mapping** **1.** OCR C6.3.1-C6.3.4; Kerboodle pp.252-262 **A Level links** **1.** H432 HSW evidence, uncertainty and societal decisions. **2.** H432 energetics, rates and equilibrium in	**Curriculum enactment** **1.** Evaluate evidence and distinguish correlation, mechanism and uncertainty. **2.** Interpret environmental data and compare mitigation strategies. **3.** Model potable-water treatment and compare potability with purity. **Misconceptions and fixes** **1.** Climate and weather are interchangeable -> separate timescales. **2.** The greenhouse effect is entirely harmful -> distinguish natural and enhanced effects.	**Students will know and be able to** **1.** Explain atmospheric change and pollutants. **2.** Evaluate climate evidence and mitigation. **3.** Describe potable-water treatment. **4.** Apply C1-C6 knowledge synoptically. **Assessment checkpoints** **1.** Atmosphere retrieval; climate extended response; cumulative completion check by 25 March. **Department response** **1.** Use question-level evidence to locate underlying gaps.

TERM	PROGRESSION FROM YEAR 10	INTENT	IMPLEMENTATION	IMPACT
		systems. **3.** H432 analytical evidence.	**3.** Ozone depletion causes global warming -> separate mechanisms. **4.** Clear water is pure and safe -> distinguish appearance, potability and purity. **5.** Uncertainty means no conclusion -> evaluate confidence and converging evidence. **Inclusive access** **1.** Pre-teach vocabulary and symbols. **2.** Chunk multistep calculations and processes. **3.** Use worked examples before independent application.	**2.** Complete DIRT, responsive reteaching and transfer in one lesson. **3.** Check transfer through a new question.

3. Assessment Checkpoint Summary

Checkpoint	Indicative timing	Progression from Year 10	Content	Follow-up
Entry diagnostic	September 2026	C3-C4 and quantitative prerequisites	C1-C4 retrieval, equations, moles and practical skills	Plan targeted retrieval.
C5 practice test	Autumn 2	Applies C3.1-C3.2 and Year 10 practical skills	C5.1-C5.3 taught content	Teacher-set revision.
C5 official test	Autumn 2	Measures quantitative, rates and equilibrium progression	C5.1-C5.3	Combined DIRT/reteaching/transfer.
Trial-examination analysis	As published by school	Cumulative Year 9-11 content	Content taught at that point	Class and individual intervention.
C6 cumulative checkpoint	Spring 2	Applies bonding, reactions, industrial and organic chemistry	C6.1-C6.3	Combined feedback and content-completion action.
Content-completion audit	25 March 2027	Confirms readiness for revision	C5.1-C6.3	No new content after Easter.
Summer revision cycles	April-public examinations	Cumulative C1-C6	Timed sections and practical recall	Responsive revision from evidence.

4. OCR A Level Readiness and Assessment Progression

Year 11 foundation	Exact H432 progression	Year 11 evidence	Readiness indicator
Quantitative chemistry	2.1.3 Amount of substance	Yield, concentration and titration calculations	Uses units, equations and significant figures independently.
Kinetics	3.2.2 and 5.1.1 rates	Practical, graphs and collision explanations	Links data to mechanism.
Equilibrium	3.2.3 and 5.1.2	Shift predictions and industrial conditions	Separates rate, composition and position.
Organic chemistry	Modules 4 and 6	Formulae, reactions and polymers	Tracks structures and functional groups.
Evidence evaluation	HSW and Module 1	Climate, process and practical evaluation	Builds coherent evidence-based conclusions.

5. Routine Curriculum Evaluation and Ofsted Readiness

Focus	Expected practice	Routine evidence	Department response
Coherence	Prior/future links explicit.	Work, retrieval and discussion.	Adjust sequencing where prerequisites are insecure.
Ambition/inclusion	Same ambitious core; scaffolds support access.	Participation, SEND information and outcomes.	Refine vocabulary, models and guided practice.
Practical entitlement	Practical work develops knowledge and competence.	Records, apparatus, analysis and safety.	Track and revisit techniques.
Retention	C1-C6 revisited cumulatively.	Homework, quizzes and assessments.	Increase retrieval for fragile concepts.
Student experience	Pupils understand learning and feedback.	Discussion, books and DIRT.	Address inconsistency between classes.

6. Document Control

Owner	Academic year	Required completion	Status
Head of Chemistry	2026-2027	C5.1-C6.3 by 25 March 2027	Final departmental draft pending timetable/SIMS/trial dates