

IGCSE Chemistry 0625 Intensive Lesson Plan

(16-Week Framework)

Total Duration: 16 weeks (can be adapted to 12 weeks with more daily hours)

Weekly Structure: 4-5 theory lessons + 1 practical/analysis session + 1 past paper review

Target: Extended tier (Papers 2, 4 & 6)

Based on: Analysis of 2024-2025 Paper 4 past papers and syllabus requirements

Topic Weightings & Time Allocation

Based on comprehensive analysis of recent Paper 4 examinations

Topic Area	Approx. Weighting	Weeks Allocated	Key Focus
1. Stoichiometry & The Mole	15-20%	3 weeks	The absolute core. Calculations, formulas, reacting masses, concentrations.
2. Acids, Bases & Salts	12-18%	2.5 weeks	Reactions, preparations, titrations. A guaranteed major question.
3. Organic Chemistry	12-18%	2.5 weeks	Naming, reactions, polymers, fuels. Another guaranteed major question.
4. Physical Chemistry (Energetics, Rates, Eq.)	15-20%	2.5 weeks	Bond energies, rates graphs, equilibrium principles.
5. Electrochemistry & Metals	10-15%	2 weeks	Electrolysis, reactivity series, extraction (Fe, Al).
6. Periodic Table & Air/Water	10-15%	1.5 weeks	Group trends, water treatment, greenhouse effect.
7. Experimental Techniques & Analysis	Integrated	(Integrated weekly)	Tests for ions/gases, chromatography, lab safety.
Past Paper Practice & Mock Exams	-	1.5 weeks	Full exam simulation and review.
Revision & Final Prep	-	1 week	Weakness targeting, exam technique.

Detailed Weekly Breakdown

WEEK 1-3: THE CORE FOUNDATION – STOICHIOMETRY & PARTICLES

Focus: Building the essential quantitative and qualitative toolkit.

Week 1: States of Matter & Experimental Basics

- **Day 1:** States of matter, kinetic particle theory, diffusion.
- **Day 2:** Separation techniques (filtration, distillation, chromatography).
- **Day 3: Paper 6 Skills:** Drawing apparatus, describing separation methods, calculating Rf values.
- **Day 4:** Past paper practice: Multiple-choice and short-answer on techniques.
- **Day 5: Practical/Simulation:** Separating sand/salt or ink chromatography.
- **Day 6:** Atomic structure, isotopes, electronic configuration.

Week 2: Bonding, Structure & Properties

- **Day 1:** Ionic, covalent (simple/macromolecular), metallic bonding.
- **Day 2:** Relating structure to properties (MP/BP, conductivity, solubility).
- **Day 3: Past Paper Practice:** Explain questions on properties based on structure.
- **Day 4:** Writing chemical formulas and equations (balancing, state symbols).
- **Day 5: Paper 6 Skills:** Evaluating experimental methods for purity.
- **Day 6:** Introduction to the mole concept. Relative atomic/molecular mass.

Week 3: The Mole – Core Calculations

- **Day 1:** Moles and mass calculations. Moles and gas volume.
- **Day 2:** Moles and solution concentration (mol/dm³).
- **Day 3:** Empirical and molecular formula calculations.
- **Day 4: Past Paper Practice:** Intensive stoichiometry calculations (Paper 4).
- **Day 5: Practical/Data Analysis:** Determining the formula of a metal oxide (simulated or actual data).
- **Day 6:** Percentage yield and percentage purity. Limiting reactant intro.

WEEK 4-5: ACIDS, BASES & SALTS (Major Topic 1)

Week 4: Acids & Bases Theory

- **Day 1:** Properties of acids/bases, pH scale, oxides (acidic/basic/amphoteric).
- **Day 2:** Reactions of acids (metals, bases, carbonates).
- **Day 3:** Titration calculations and curves.
- **Day 4: Past Paper Practice:** Acid-base reaction and titration questions.
- **Day 5: Practical/Simulation:** Acid-base titration (or data analysis).
- **Day 6: Paper 6 Skills:** Recording accurate titration readings, processing data.

Week 5: Salts & Chemical Analysis

- **Day 1:** Preparation of salts: titration, precipitation, excess metal/carbonate.
- **Day 2:** Solubility rules and identifying unknown salts.
- **Day 3: Tests for Ions & Gases - MASTERCLASS.** Cations, anions, common gases.
- **Day 4: Past Paper Practice:** Salt prep and analysis questions (often 6-8 mark structured).
- **Day 5: Practical/Simulation:** Preparing a pure dry sample of a salt.
- **Day 6:** Cumulative quiz on Weeks 1-5 core concepts.

Week 6: Energetics & Rates of Reaction

- **Day 1:** Exo/endothermic, energy profile diagrams, bond energy calculations.
- **Day 2:** Factors affecting reaction rates, collision theory.
- **Day 3:** Interpreting rate graphs, catalysts.
- **Day 4: Past Paper Practice:** Bond energy and rates questions.
- **Day 5: Practical/Data Analysis:** Investigating a factor affecting rate (e.g., concentration).
- **Day 6: Paper 6 Skills:** Drawing graphs from data, describing safety precautions.

Week 7: Reversible Reactions & Equilibrium

- **Day 1:** Reversible reactions, dynamic equilibrium, Haber Process.
- **Day 2:** Le Chatelier's Principle – effect of T, P, concentration.
- **Day 3: Past Paper Practice:** Equilibrium and industrial chemistry questions.
- **Day 4: Full Paper 2 Mock** (45 min) on topics covered so far.
- **Day 5:** Review of Paper 2 mock, focusing on misconceptions.
- **Day 6:** Introduction to Electrolysis – basic principles, molten electrolytes.

WEEK 8-9: ELECTROCHEMISTRY & METALS

Week 8: Electrolysis

- **Day 1:** Predicting products for aqueous and molten electrolytes.
- **Day 2:** Applications: electroplating, purification, extraction of aluminium.
- **Day 3: Past Paper Practice:** Electrolysis questions and half-equations.
- **Day 4:** Reactivity Series, displacement reactions, redox in terms of electrons.
- **Day 5: Practical/Simulation:** Electrolysis of copper(II) sulfate.
- **Day 6: Paper 6 Skills:** Planning an investigation to order metals by reactivity.

Week 9: Extraction and Uses of Metals

- **Day 1:** Extraction of iron (Blast Furnace), steel production.
- **Day 2:** Extraction of aluminium, recycling.
- **Day 3: Past Paper Practice:** Integrated questions on metals & electrolysis.
- **Day 4: Full Paper 4 Section A Practice** (mixed from Weeks 1-9).
- **Day 5:** Review of Paper 4 practice, targeting calculation errors.
- **Day 6:** Introduction to Organic – fuels, crude oil, homologous series.

Week 10: Alkanes, Alkenes & Alcohols

- **Day 1:** Introduction to organic, formulae, naming up to C₄.
- **Day 2:** Alkanes (properties, combustion, substitution), cracking.
- **Day 3:** Alkenes (addition reactions, bromine test), polymers.
- **Day 4: Past Paper Practice:** Organic reactions and naming.
- **Day 5:** Alcohols (production by fermentation, oxidation to carboxylic acids).
- **Day 6: Practical/Simulation:** Testing for unsaturation (bromine water).

Week 11: Carboxylic Acids, Polymers & Review

- **Day 1:** Carboxylic acids, esters (formation, uses).
- **Day 2:** Addition polymerisation, drawing monomers/polymers.
- **Day 3: Past Paper Practice:** Full Organic Chemistry question (often Q10/11 on Paper 4).
- **Day 4:** Macromolecules recap (diamond, graphite, silica, polymers).
- **Day 5: Paper 6 Skills:** Identifying variables in an organic preparation.
- **Day 6:** Mid-course review & weak topic identification.

WEEK 12-13: PERIODICITY & ENVIRONMENTAL

Week 12: Periodic Table Trends

- **Day 1:** Structure of the table, trends in groups (Group I, VII).
- **Day 2:** Transition metals vs. Group I, metallic/non-metallic character.
- **Day 3: Past Paper Practice:** Periodic table and group property questions.
- **Day 4:** Air and pollution: greenhouse gases, climate change, acid rain.
- **Day 5:** Water: treatment, hardness (causes, removal).
- **Day 6: Past Paper Practice:** Air/Water and fertiliser questions (NPK).

Week 13: Nitrogen & Sulfur Chemistry / Final Touches

- **Day 1:** Ammonia (Haber Process details), fertilisers, eutrophication.
- **Day 2:** Sulfur, manufacture of sulfuric acid (Contact Process).
- **Day 3: All-Ion-and-Gas-Tests Final Review Session.**
- **Day 4: Full Paper 6 Mock** (1 hour) – Practical skills paper.
- **Day 5:** Review Paper 6 mock – focus on describing experiments and conclusions.
- **Day 6: Full Paper 4 Mock** (1h 15min) – Complete exam.

INTENSIVE PAST PAPER PRACTICE & FINAL PREP

WEEK 14: Mock Exams & Granular Analysis

- **Day 1: Full Mock Paper 2** (45 min) + review.
- **Day 2: Full Mock Paper 4** (1h 15min) + detailed mark scheme review.
- **Day 3: Full Mock Paper 6** (1h) + review.
- **Day 4: Error Analysis Day:** Categorise mistakes (careless, conceptual, time).
- **Day 5: Targeted Revision 1:** Top 2 weakest topics identified from mocks.
- **Day 6: Targeted Revision 2:** Stoichiometry & Organic Refresher.

WEEK 15: Skill-Specific Mastery & Final Mocks

- **Day 1: Command Words & 6-Mark Question Workshop** (describe, explain, suggest, evaluate).
- **Day 2: Graph & Calculation Masterclass** (gradients, extrapolation, mole steps).
- **Day 3: Time Management Drills:** Paper 4 speed practice (1.5 min/mark).
- **Day 4: Final Full Mock** (All papers in sequence under timed conditions).
- **Day 5: Review Final Mock:** Final list of 5 key points to remember.
- **Day 6:** Light review. Focus on ion tests, formula sheet, and exam mindset.

WEEK 16: Exam Week Buffer / Final Confidence

Use this week for final review, addressing last-minute questions, and stress-free consolidation before the actual exam date.

Assessment Schedule

Week	Assessment Type	Focus Area
5	Mid-Topic Test	Stoichiometry & Acids/Bases
9	Topic Test	Physical Chem & Electrochemistry
11	Topic Test	Organic Chemistry
13	Full Mocks	Papers 4 & 6
14-15	Intensive Mocks	All Papers & Skills

Past Paper Integration Strategy

- 1. Stoichiometry First:** Integrate mole calculations into almost every subsequent topic practice.
- 2. Analysis is Key:** Weekly review of **Tests for Ions and Gases**. Make flashcards.
- 3. Organic Reaction Pathways:** Practice creating flowcharts linking alkanes → alkenes → alcohols → carboxylic acids → esters.
- 4. Paper 6 Focus:** Prioritize questions on describing salt preparation, titration method, and planning investigations to identify substances.
- 5. Command Words:** Pay special attention to **"Suggest"** (uses knowledge in a new context) and **"Explain"** (requires linking cause and effect).

Resource Recommendations

- **Past Papers:** Cambridge International official site (2020-2025 series)
- **Topic Questions:** SaveMyExams, PhysicsAndMathsTutor (broken down by sub-topic)
- **Practical Skills:** Cambridge IGCSE Chemistry Practical Workbook
- **Simulations:** PhET, Royal Society of Chemistry simulations
- **Revision Guides:** Cambridge IGCSE Chemistry Revision Guide

Key Success Strategies

- 1. Daily Formula Practice:** Spend 10 minutes daily memorizing key equations and formulas.
- 2. Ion Test Mastery:** Create flashcards for ALL cation, anion, and gas tests – non-negotiable!
- 3. Calculation Steps:** Teach the systematic approach: 1) Write balanced equation, 2) Calculate moles, 3) Convert to required units.
- 4. Time Management:** Paper 4 requires ~1.5 minutes per mark; Paper 2 requires ~1 minute per question.
- 5. Practical Integration:** Relate every practical to its underlying theory and potential Paper 6 questions.

This plan ensures comprehensive syllabus coverage with integrated past paper practice, developing both theoretical understanding and practical skills needed for Papers 2, 4, and 6.