

# Pearson Edexcel International GCSE Science

Welcome to Pearson (Module 1)  
4CH1-24IO1



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## Aims and objectives

Today, we will:

- To understand how the qualification is devised
- To review the content of the qualification
- To understand the assessment of the qualification
- To explore how to plan the course
- To identify the support available from Pearson

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## Session agenda

- Welcome
- The assessment model
- Specification content
- Assessment of the qualification
- Support from Pearson

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Welcome to Pearson

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## Welcome to Pearson Edexcel

- We are the world's leading learning company and as the **UK's largest awarding organisation**, best placed to provide qualifications aligned to the British educational system.
- Our international **heritage stretches back over 150 years**.
- Today, we partner with schools, universities and employers worldwide, offering world-class, globally-recognised qualifications to over **3.5 million students a year**.



Trusted and recognized qualifications partner to **6,500** schools, colleges and employers globally



We mark over **10 million** exam scripts on behalf of the UK Department for Education each year



We operate in **70 countries** worldwide

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## Understanding the Assessment

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## The assessment model

This tells us how we assess candidates.

Key features:

- The choice of Linear or Modular examinations
- No separate practical exam – practical skills are assessed on the papers
- Papers have similar question styles but paper 2 has additional content
- **No tiering** of papers – both papers grade from 9–1

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## The two different routes of Assessment

If you're happy with the linear approach, there is no pressure to move to the modular route; our linear International GCSEs will continue to be offered and taken widely by students around the world.

### Modular route



Unit assessments can be taken over multiple exam series.

Grades are calculated on raw marks which are then converted to a UMS (Uniform Mark Scale).

Students can re-sit individual units in any exam series.

Once a student has all their unit results, they can 'cash in' these results for their grade.

A modular route is only offered by Pearson Edexcel at International GCSE

### Linear route



Assessments for all units are taken together in one exam series.

Grades are calculated on raw marks only.

Students can re-sit assessments for all units together in one exam series.

The grade students receive are calculated at the end of the exam series in which they sat their assessments.

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## Chemistry: a closer look, Paper 1

The modular and linear approach contain the same content, but the modular approach breaks the journey into two units with an exam at the end of each unit.

Paper 1	
Linear	Modular
2-hour written examination.	1-hour-40-minute written examination.
The total number of marks is 110, 61.1% of the total International GCSE.	The total number of marks is 90, 50% of the total International GCSE.
<b>Content summary</b> Assesses core content that is NOT in bold and does not have a 'C' prefix. Questions may come from any topic area across the specification. <b>Topic 1: Principles of chemistry</b> <b>Topic 2: Inorganic chemistry</b> <b>Topic 3: Physical chemistry</b> <b>Topic 4: Organic chemistry</b>	<b>Content summary</b> <b>Topic 1: Principles of chemistry</b> <ul style="list-style-type: none"> <li>a. States of matter</li> <li>b. Elements, mixtures &amp; compound</li> <li>c. Atomic structure</li> <li>d. Periodic table</li> <li>e. Chemical formulae, equations &amp; calculations</li> </ul> <b>Topic 2: Inorganic chemistry</b> <ul style="list-style-type: none"> <li>d. Reactivity series</li> <li>e. Extraction and uses of metals</li> <li>f. Acids, alkalis and titrations</li> <li>g. Acids, bases and salt preparations</li> </ul> <b>Topic 3: Physical chemistry</b> <ul style="list-style-type: none"> <li>a. Energetics</li> </ul> <b>Topic 4: Organic chemistry</b> <ul style="list-style-type: none"> <li>a. Introduction</li> <li>b. Crude oil</li> <li>c. Alkanes</li> <li>d. Alkenes</li> </ul>

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## Chemistry: a closer look, Paper 2

The modular and linear approach contain the same content, but the modular approach breaks the journey into two units with an exam at the end of each unit.

Paper 2	
Linear	Modular
1-hour-15-minute written examination.	1-hour-40-minute written examination.
The total number of marks is 70, 38.9% of the total International GCSE.	The total number of marks is 90, 50% of the total International GCSE.
<b>Content summary</b> Assesses all the content <b>including content that is in bold and has a 'C' prefix</b> . Questions may come from any topic area across the specification. Bold statements cover some topics in greater depth.	<b>Content summary</b> <b>Topic 1: Principles of chemistry</b> <ul style="list-style-type: none"> <li>e. Chemical formulae, equations &amp; calculations</li> <li>f. Ionic bonding</li> <li>g. Covalent bonding</li> <li>h. Metallic bonding</li> <li>i. electrolysis</li> </ul> <b>Topic 2: Inorganic chemistry</b> <ul style="list-style-type: none"> <li>a. Group 1</li> <li>b. Group 7</li> <li>c. Gases in the atmosphere</li> <li>h. Chemicals tests</li> </ul> <b>Topic 3: Physical chemistry</b> <ul style="list-style-type: none"> <li>b. rates of reaction</li> <li>c. reversible reactions and equilibrium</li> </ul> <b>Topic 4: Organic chemistry</b> <ul style="list-style-type: none"> <li>e. Alcohols</li> <li>f. Carboxylic acids</li> <li>g. Esters</li> <li>h. Synthetic polymers</li> </ul>

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## Teaching in a Modular Way

You may want to change the way you teach the International GCSE Biology Specification Content if you take the Modular route for assessment.

- To support your planning and teaching of the course, we are producing **course planners**, **editable schemes of work** and **Getting Started Guide**.
- First teaching for International GCSE Chemistry (Modular) is September 2024
- First assessment of International GCSE Chemistry (Modular) is May/June 2025

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## Re-sits for Modular International GCSE

- Learners can re-sit any unit irrespective of whether the qualification is to be cashed in.
- If a learner resits a unit more than once, only the better of the two most recent attempts of that unit will be available for aggregation to a qualification grade.
- Results of units will be held in Pearson Edexcel's unit bank for as many years as this specification remains available.
- Once International GCSE in Chemistry (Modular) has been certificated, all unit results are deemed to be used up at that level. These results cannot be used again towards a further award of the same qualification at the same level.

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How is the content assessed?

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## Activity 1

Which specification point is the following question assessing?

Malachite is an ore of copper containing copper(II) carbonate and several other compounds that are insoluble in water.

You are supplied with several pieces of malachite, these chemicals and items of apparatus.

Chemicals: dilute sulfuric acid      magnesium powder

Apparatus: beakers      filter funnel and paper      pestle and mortar

Describe how you would use the chemicals and the apparatus to obtain a sample of copper from the malachite.

(6)

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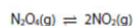
## Activity 2

Which specification points are the following questions assessing?

7 Dinitrogen tetraoxide,  $\text{N}_2\text{O}_4$ , is a colourless gas.

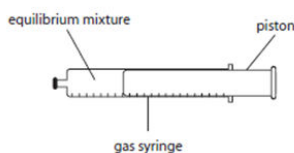
Nitrogen dioxide,  $\text{NO}_2$ , is a brown gas.

The two gases can exist together in dynamic equilibrium according to the equation



(a) Explain what is meant by the term **dynamic equilibrium**.

(b) Some  $\text{N}_2\text{O}_4$  and some  $\text{NO}_2$  are put into a sealed gas syringe and allowed to form an equilibrium mixture.



This equilibrium mixture is brown.

The pressure of the gas in the syringe is increased by pushing in the piston. The mixture is then allowed to reach a new equilibrium at the same temperature as before.

Explain why the new equilibrium mixture contains less  $\text{NO}_2$  than the original equilibrium mixture.

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## Some common errors seen in answers

- Referring to intermolecular forces of attraction when discussing the properties of substances with giant covalent structures, ionic compounds and metals
- Stating that covalent bonds are weak, and therefore require little energy to break, when explaining why simple molecular substances have low melting/boiling points
- Losing marks when writing chemical equations by getting the formulae incorrect (e.g. H instead of  $\text{H}_2$ ,  $\text{MgCl}$  instead of  $\text{MgCl}_2$ )

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## Some common errors seen in answers

- Referring to changes in (kinetic) energy of the particles when explaining the effect of surface area of a solid or concentration of a solution of the rate of reaction.
- Providing contradicting information when explaining the effects of the change of a variable on the position of equilibrium of a reversible reaction  
 E.g.  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g}) \quad \Delta H = -92 \text{ kJ/mol}$   
 A decrease in temperature will increase the yield of ammonia as the equilibrium shifts in the endothermic direction
- Note that Le Chatelier's principle is not on the specification, Mark schemes never give credit for the idea that an equilibrium reaction "wants to resist a change" or "moves to oppose a change"

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## Activity 3

$\text{SiF}_4$  and  $\text{SiCl}_4$  have simple molecular structures.

$\text{SiO}_2$  has a giant covalent structure.

- Explain why the boiling point of  $\text{SiCl}_4$  is greater than the boiling point of  $\text{SiF}_4$  (2)
- Explain why the boiling point of  $\text{SiO}_2$  is very much greater than the boiling point of  $\text{SiCl}_4$  (2)

What are the essential points to include when answering these two questions?

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## Activity 3

Simple molecular	Giant covalent
Compound exists as simple molecules	The structure is a giant lattice, not molecular
Weak forces between molecules	Strong covalent bonds between atoms
Forces easily overcome – so low boiling point	Lots of energy needed to break the bonds – high boiling point
Stronger intermolecular forces lead to higher boiling point	There are no molecules, so no intermolecular forces

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## Assessment objectives

### Assessment objectives and weightings

		International GCSE
<b>AO1</b>	Knowledge and understanding of chemistry	38–42%
<b>AO2</b>	Application of knowledge and understanding, analysis and evaluation of chemistry	38–42%
<b>AO3</b>	Experimental skills, analysis and evaluation of data and methods in chemistry	19–21%
		100%

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## Assessment objectives

### Relationship of assessment objectives to units

Unit number	Assessment objective		
	AO1	AO2	AO3
Chemistry Paper 1	23.2–25.7%	23.2–25.7%	11.6–12.8%
Chemistry Paper 2	14.8–16.3%	14.8–16.3%	7.4–8.2%
<b>Total for International GCSE</b>	38–42%	38–42%	19–21%

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## Planning the course

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## Key documents

There are two key documents needed to deliver the course

- The specification
- The SAMS

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## What is the specification?

- The specification is the main document you need to teach the course
- It outlines the aims of the course, the content you **MUST** cover and all the information you need about assessing your students
- This document can be found on our website

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## What are the SAMS?

- SAMS is short for Sample Assessment Materials. This document is just as important as the specification
- The SAMS are examples of the question papers and mark schemes and show the question types and how they will be marked by the examiners.
- We base all of our future papers and assessments on these Sample Assessment Materials

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## How do I make sure I cover the content?

- Specification
- Schemes of work
- Lesson plans

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## Example Scheme of Work

Edexcel International GCSE in Chemistry (2017)

Week	Content coverage	Learning outcomes	Exemplar activities	Exemplar resources	Which transferable skills are explicitly assessed through examination	Which transferable skills could also be acquired through teaching and delivery
1	<b>Section 1: Principles of chemistry</b> (a) States of matter	Students will be assessed on their ability to:  1.1 understand the three states of matter in terms of the arrangement, movement and energy of the particles  1.2 understand the interconversions between the three states of matter in terms of: <ul style="list-style-type: none"> <li>the names of the interconversions</li> <li>how they are achieved</li> <li>the changes in arrangement, movement and energy of the particles</li> </ul> 1.3 understand how the results of experiments involving the dilution of coloured solutions and diffusion of gases can be explained.	<b>Activity:</b> <ul style="list-style-type: none"> <li>Model particle behaviour in the three states using trays of marbles; draw diagrams of the results.</li> </ul> <b>Demonstrations:</b> <ul style="list-style-type: none"> <li>Diffusion of gases – ammonia and hydrogen chloride (RSC 65).</li> <li>Bromine diffusing into a gas jar of air.</li> </ul> <b>Class practicals:</b> <ul style="list-style-type: none"> <li>Diffusion in liquids (RSC 27).</li> <li>Recording a heating curve for water, from ice to boiling point.</li> </ul>	Edexcel International GCSE Chemistry Student Book: Pages 1–4  RSC Classic Chemistry Experiments Page 68  RSC Classic Chemistry Demonstrations Page 162	Analysis	Analysis Problem solving

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## Possible components of a lesson plan

While there are many formats for a lesson plan, most lesson plans contain some or all of these elements, typically in this order:

- Title of the lesson
- Time required to complete the lesson
- List of required materials
- List of objectives (what the student is expected to know by the end of the lesson)

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## Possible components of a lesson plan

- The 'lead-in' to the lesson that focuses students on the lesson's skills or concepts – this could include showing pictures or models, asking leading questions, or reviewing previous lessons
- An instructional component that describes the sequence of events that make up the lesson, including the teacher's instructional input and, where appropriate, guided practice by students to consolidate new skills and ideas
- Independent practice that allows students to extend skills or knowledge on their own

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## Possible components of a lesson plan

- A summary, where the teacher wraps up the discussion and answers questions
- A risk assessment where the lesson's risks and the step taken to minimize them are documented
- An analysis component the teacher uses to reflect on the lesson itself, such as what worked and what needs improving

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## Practicals in the specification

- The specification lists 12 Core practicals
- These are listed in italics as specification points  
E.g. 1.7C *practical: investigate the solubility of a solid in water at a specific temperature*  
2.43C *practical: prepare a sample of pure, dry lead(II) sulfate*
- It is strongly recommended that students complete these Core Practicals in order to develop skills

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## Practicals in the specification

- Other suggested practicals appear in the specification
- The suggested practicals are optional
- You may add – or substitute – your own practicals too!

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## Experimental skills

- The best way to develop experimental skills is to embed practical investigations in teaching or theory
- The development of knowledge and experimental skills can then happen together, leading to secure acquisition of both knowledge and skills

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## Experimental skills

In the assessment of experimental skills, students may be tested on their ability to:

- solve problems set in a practical context apply scientific knowledge and understanding in questions with a practical context
- devise and plan investigations, using scientific knowledge and understanding when selecting appropriate techniques
- demonstrate or describe appropriate experimental and investigative methods, including safe and skilful practical techniques

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## Experimental skills

In the assessment of experimental skills, students may be tested on their ability to:

- make observations and measurements with appropriate precision, record these methodically and present them in appropriate ways
- identify independent, dependent and control variables
- use scientific knowledge and understanding to analyse and interpret data to draw conclusions from experimental activities that are consistent with the evidence

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## Experimental skills

In the assessment of experimental skills, students may be tested on their ability to:

- communicate the findings from experimental activities, using appropriate technical language, relevant calculations and graphs
- assess the reliability of an experimental activity
- evaluate data and methods taking into account factors that affect accuracy and validity

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# Support

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## Support for you at every stage

Free Resources and support	Planning, teaching and learning	Exam preparation and assessment	Results support
Getting Started Guide	✓		
Training Events (Face-to-Face & Online)	✓		
Subject Advisor Support	✓	✓	✓
Community Forums	✓	✓	✓
Schemes of Work	✓		
Skills Mapping	✓		
Sample Assessment Materials	✓	✓	
Examiner Reports	✓	✓	✓
Exemplar Marked Responses		✓	
Past Papers		✓	
examWizard		✓	
Mark Schemes		✓	
ResultsPlus Mock Exam Analysis		✓	
Results Plus		✓	✓
Access to Scripts Service (ATS)			✓

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## Teaching and Learning Materials online

International GCSE  
Biology (2017)

Pearson | Edexcel

New Modular International GCSE giving you a choice between linear or modular assessment. [Learn more](#)

**Course materials**

**FILTERS**

**CATEGORIES**

- Specification and sample assessments (4) [EXPAND ALL](#)
- Exam materials (120)
- Teaching and learning materials (40)

**CONTENT TYPE**

- All
- Notice (1)
- Sample assessment material (2)
- Specification (1)

**FORMAT**

- All
- PDF (3)
- ZIP (1)

**Specification and sample assessments (4)**

Specification

Notice

Sample assessment material

**Specification**

First teaching: **September 2017**  
First external assessment: **2019**  
Our Pearson Edexcel International GCSE (9-1) Biology specification and support materials have been developed with the help of teachers, higher education representatives and subject expert groups.

The qualification supports progression to further study, with up-to-date content reflecting the latest thinking in the subject. It is comparable to the UK reformed GCSE in terms of the level of demand and assessment standards.

**DOWNLOAD**

PDF | 1.2 MB

**Register your interest**

Find out more about Pearson Edexcel International qualifications and sign up to receive the latest news. [Let us know!](#)

**Course materials**

- Specification and sample assessments (4)
- Exam materials (120)
- Teaching and learning materials (44)

**Teaching support and training**

- Training sessions
- Results support
- The 9-1 grading scale explained

**Published resources**

To support effective classroom delivery, we've developed a range of published resources for the new Pearson Edexcel International GCSE (9-1), with progression, relevance and support at their core.

[Learn more!](#)

**Useful documents**

- A guide to International GCSEs (9-1) (PDF | 3.9 MB)
- International GCSE (9-1) Biology guide (PDF | 1.3 MB)
- Pearson Edexcel International welcome pack (PDF | 3.1 MB)

**News and updates** [See more](#)

February 2024 Teaching Science update | 7 February 2024  
January 2024 Teaching Science update | 19 January 2024  
December 2023 Teaching Science update | 4 December 2023

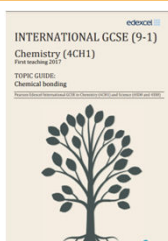
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## Guides



### Maths for Scientist's Guide

- This guide to maths for scientists outlines the content that students will have covered in their maths lessons throughout KS3 and KS4.
- You can use this guide to help you understand how different areas are approached in maths, and therefore support your teaching of mathematical content in science lessons.



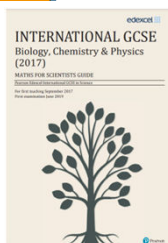
### Topic Guide: Chemical Bonding

- Chemical bonding (and related ideas about chemical stability/reactivity) is acknowledged as being a 'tricky to teach' topic, and with good reason.
- It involves abstract, theoretical ideas that require students to develop and apply increasingly sophisticated ideas in order to make sense of their observations of the macroscopic properties of different substances.

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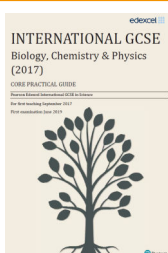
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## Guides



### Topic Guide: Chemical Equilibrium

- In 1984 R.T. Allsop and N.H. George wrote an article, published in Education in Chemistry, entitled 'Le Châtelier – A Redundant Principle?' in which they argued that the use of the principle was counterproductive to the understanding of chemical equilibrium.
- Although Le Châtelier's Principle is not required for teaching the International GCSE Chemistry specification, a number of students refer to it in answers.



### Core Practical Guide

- An introduction to each practical activity
- Description of the practical, with some useful hints and tips
- Questions to use with students to test their understanding as they do the experiment in the lab
- A past paper question, where relevant, to use as a homework activity

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## Support for Exam preparation and post results

### ResultsPlus

- Free online results analysis tool for teachers.
- Provides a detailed breakdown of student performance in Pearson Edexcel exams.
- Identify topics and questions where the student could benefit from further learning and inform teaching strategies and approaches.
- Benchmark your school's performance against other Pearson Edexcel schools in your country.
- Not just a post-results tool: Mock exam results can also be fed into the system to produce analysis.
- Find student results analysis from their previous Pearson Edexcel school.
- ResultsPlus Direct gives your students access to their final grades and performance breakdown, wherever they are.
- Schools can sign up for free ResultsPlus account in just a few quick and easy steps: <https://qualifications.pearson.com/en/support/Services/ResultsPlus.html>

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## ResultsPlus



**1.**  
Student  
takes exam  
on paper



**2.**  
Exam papers  
scanned



**3.**  
Examiners  
mark papers  
online



**4.**  
Performance  
reports  
shared

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## examWizard

- A free tool for teachers which helps you make quick homework assignments, topic tests and mock exams.
- Questions tagged against unit, topic and assessment objective or simply choose a whole past paper.
- Use existing mark schemes for accurate marking.
- Use examiner report for insight.
- Most recent exam content available sooner.
- Use the results to understand where students need more support, informing teaching strategies.

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## Access to Script (ATS) Online Portal

Access to Scripts (ATS) is a free online portal which allows teachers to immediately access electronically marked exam papers

Provides enhanced transparency and

- Offers transparent approach to marking process
- Provides better understanding of marking before requests for enquiries about results are made
- Provides excellent aid for teaching and preparing other cohorts for examinations by helping you to evaluate a student's performance on particular questions in relation to what they have been taught.



Available instantly from results day for all our examination series, for a defined window, you can view and download scripts which have been marked online free of charge from our Self-Service Portal.

For more information on ATS, and the post results windows, visit our post-results pages.

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## Additional Paid Resource

Resource	Planning, teaching and learning	Exam preparation and assessment	Results support
Curriculum-matched Student Books with ActiveBooks	✓	✓	
Teaching Hubs	✓	✓	

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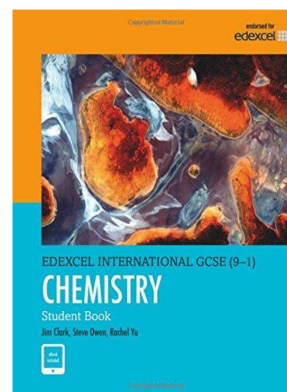
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## Pearson published resources

### Student Book

Edexcel International GCSE (9-1): Chemistry  
Student Book

[www.pearson.com/international-schools](http://www.pearson.com/international-schools)

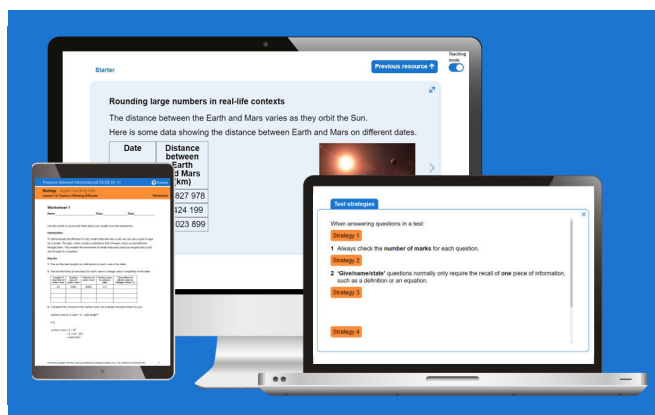


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International GCSE (9-1)

## TeachingHubs

The new Teaching Hubs provide fully comprehensive planning and front-of-class guidance, along with exam-preparation resources and CPD support, to help you deliver your International GCSE lessons to a high standard – whether you are a specialist or non-specialist teacher.



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## Contact your dedicated Subject Advisor

Irene Muhiddin  
Telephone: +44 (0) 344 463 2535

[qualifications.pearson.com/contactus](https://qualifications.pearson.com/contactus)  
Email: [teachingscience@pearson.com](mailto:teachingscience@pearson.com)



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## Questions

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