



Pearson Edexcel International GCSEs

Science

Biology, Chemistry, Physics,
Human Biology, Science (Double Award)
and Science (Single Award)

Linear qualifications first teaching September 2017

Modular qualifications first teaching September 2024



SCAN ME

Choosing Pearson Edexcel as your school's International GCSE partner

Helping your students select their International GCSE options is a key moment in their schooling; it's an important time in learners' lives and we want to reassure you that with Pearson as your qualifications partner, you can be sure both you and your students are setting yourselves up for future success.

In this guide, you'll learn more about who we are, the recognition and progression our Pearson Edexcel international qualifications enjoy, and we'll take a closer look at International GCSE Science, including our choice of linear or modular assessment routes.

We wish you the best of success for your International GCSE journey!

Our international qualifications and resources deliver results

See what our schools and learners say. Scan the QR code or search 'success stories' at [pearson.com/international-schools](https://www.pearson.com/international-schools).

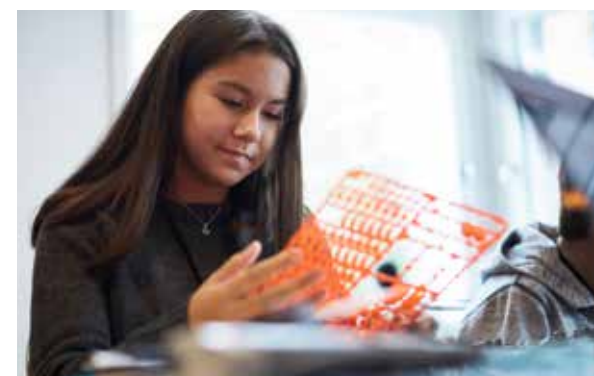


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International GCSE Science highlights



A choice of modular or linear assessment

A modular approach is where a qualification's assessments are split into units and taken over several exam series. We are the only awarding body to offer a modular route for International GCSEs as an alternative to the linear assessment route.

See page 8



Teaching Hubs

A digital solution for all International GCSE Science teachers: spend less time planning and more teaching with our Teaching Hubs, providing educators with everything they need to deliver successful lessons.

See page 28

Welcome to Pearson

As the world’s leading learning company, our mission at Pearson is to help people realise the life they imagine through learning.

We offer international qualifications and assessments designed specifically for international students, that are recognised and accepted by universities all over the world and provided to your international school by a trusted and respected awarding body with a long history of qualifications provision.

We work together with international schools around the world to make a positive difference to learners’ lives and we believe the best part of working in education is seeing learners progress.

Let’s make a difference to your learners’ futures, together.

*IAL is a registered trademark of Pearson Education Ltd in the UK and other countries.

We are with you, for you

When you partner with us, you join thousands of schools around the world who have done the same and are enjoying the benefits for their educators and learners.

The international schools we work with value our innovation, our world renowned curriculum content and qualifications and they benefit from the choice and flexibility we offer. They trust us and work closely with their local Pearson consultants who share their vision and work every day to help them achieve it.

This trusted partnership ensures learners receive the very best educational support and educators benefit from the assurance that they are backed by a dedicated team invested in their success.

What this means for you

You can trust Pearson Edexcel International GCSE qualifications; thousands of students around the world take these same qualifications every year, progressing onto our popular modular International A Levels (IAL®), International BTECs or the IB Diploma Programme, and to the world’s most respected universities.



Our qualifications heritage stretches back **over 100 years**



More than **3.5 million students** take our qualifications globally each year



Our Pearson Edexcel international and UK qualifications are offered in **more than 115 countries worldwide**



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



Our international and UK qualifications are **recognised and accepted** by universities all over the world



Modern, progressive International GCSE qualifications

For globally minded learners aged 14–16

Renowned across the world for academic excellence, Pearson Edexcel International GCSEs provide learners with the skills and knowledge they need to progress to International A Levels (IAL®) and onto the most prestigious universities across the world.

Pearson Edexcel International GCSEs are part of iProgress, our complete series of academic qualifications for 3 to 19 year-olds at international schools following a UK curriculum.

At every stage, our iProgress continuum delivers a consistent learning journey with world class support, assessments, and teaching and learning resources for students and teachers, everywhere in the world.



Recognised worldwide for academic excellence

Designed for global learners

Pearson Edexcel International GCSEs are globally recognised qualifications for learners aged 14 to 16 with academic content and assessment designed specifically for international learners. We continually review the content of our specifications – adding international topics and examples using local contexts where possible – to ensure the content of our qualifications is ever more relevant and engaging for students around the world and to enable learning in a local context to a global standard.

Transferable skills and knowledge

Opportunities to develop transferable skills such as problem solving, critical thinking, leadership and collaboration, are integrated throughout each of our Pearson Edexcel International GCSE qualifications to ensure learners have the skills and knowledge they need to progress onto International A Level, the next level of study.

Suitable and accessible for ESL learners

Our International GCSE qualifications have been designed in collaboration with subject experts, teachers and university professors, to ensure that the content and assessment methods are appropriate and will enable successful progression for learners, including those for whom English is not their first language.

Structured progression

Pearson Edexcel International GCSE qualifications are excellent preparation for Pearson Edexcel International A Levels, International BTECs, our popular, career-focused qualifications developed in partnership with employers, or the IB Diploma Programme.

As the next step up from International GCSEs, International A Levels are designed for students aged 16–18 who want to progress to the best universities around the world. They use the popular and flexible modular approach, which means exams are taken at the end of each unit of study or throughout the programme of study when students feel prepared and ready.

We work closely with higher education institutions around the world to secure recognition for our qualifications and are proud to confirm that International A Levels are recognised and accepted for entry to more than 650 leading universities worldwide.

Worldwide university recognition

Close to 1,500 universities across the world formally recognise Pearson Edexcel international qualifications, including the world’s top 20 universities, all UK universities, 260 universities in the US and leading universities in 56 other countries, and with the twenty first century skills your learners will develop as part of their International GCSE curriculum, you can be confident they will have qualifications, skills and knowledge that admissions teams and employers are looking for.

Grading and awarding

About the 9–1 grading scale

In 2014, the UK Government introduced a nine-point grading scale (9–1) to raise standards and recognise top-performing students. This replaced the traditional A*–G grading. After consultation with international schools, Pearson Edexcel chose to follow the 9–1 grading scale to ensure comparability for our international students.

Since then, millions of GCSEs and International GCSEs have been awarded using the 9–1 grading scale, making it the most used and recognised grading scale for this qualification worldwide.

Good to know

Pearson Edexcel International GCSE qualifications are equivalent to and benchmarked, grade for grade, against UK GCSEs, so you can be confident that they are recognised and respected across the world. They offer increased differentiation for your top learners (a grade 9 represents a higher level of attainment than A*) and will deliver the progression for your learners that you want to see.

Pearson Edexcel International GCSEs follow the modern 9–1 structure	GRADING STRUCTURE	OLD GRADING SCALE
This structure provides increased differentiation for learners. There is greater differentiation at the top of the scale, with three grades (9, 8, 7) rather than two (A*, A). A grade 9 represents a higher level of attainment than an old grade A* and the bottom of grade 7 broadly aligns with the bottom of an old grade A.	9	A*
	8	
	7	A
There’s also greater differentiation in the middle of the scale, with three grades 6, 5 and 4 rather than two grades (B and C). The bottom of the grade 4 broadly aligns with the bottom of the old grade C.	6	B
	5	
	4	C
The bottom of the grade 1 broadly aligns with the bottom of the old grade G.	3	D
	2	E
	1	F
	U	G
		U

“I not only recommend the International GCSE system because of their 9–1 grading scale due to having an extra grade to differentiate the top tier students, but also because this system is recognized globally therefore it opens up more opportunities for students to study at university abroad.”

John Andrew Tampubolon, International GCSE (9–1) student at Al Yasmina School, Abu Dhabi.



Flexible Science courses to suit your students' needs and interests

The most flexible International GCSE Science qualifications available

Within our International GCSE Science suite, Pearson Edexcel offer Triple (Biology, Chemistry and Physics), Double and Single Science Awards. We are the only exam board to offer the Single Science Award, providing a Science option for all students regardless of whether they wish to continue scientific study. We also offer Human Biology.

Student confidence to sit exams

Often praised for their consistency and reliability, all Pearson exam papers follow a ramped structure, ensuring the difficulty drops at the start of each question to guide students in. This allows teachers to help students practise exam technique and give them the confidence to know that if they struggle at the end of a question, they can move on, and it will be easier again. The wording and style of the questions throughout means they are accessible – all students can understand the question, even if they cannot answer them.

Developing practical skills

We integrate practical experiments into the specification, so our students do not need to sit a practical paper. This means that beyond mechanically completing a practical, our International Science GCSEs help students reach a holistic understanding, by integrating theory and practice. The skills developed are assessed through questions in written examinations. This approach allows us to cover a broader range of practicals in our specification, and our guide for teachers supports teaching the thinking skills required as well as the practical skills.

“I chose these qualifications because they are globally recognised by universities all over the world and studying abroad has always been my biggest dream. They're designed with a global perspective which I believe will allow me to apply internationally with ease, knowing my qualifications meet the global standards.”

Rethabile Mokuinihi, New Millennium International School
Lesotho, Africa

Rethabile studied Pearson Edexcel iLower Secondary
followed by Pearson International GCSEs.



Un-tiered exam papers

For Science, we deliver un-tiered exam papers, and are the only exam board to do so. This means that all students take the same paper, regardless of ability, and have the opportunity to reach their potential across the full 9–1 grade range.

All students can be taught together, which allows for easier timetabling and enables teachers the time to consider students' development as they work through the content before determining whether to enter them for Triple or Double Award.

Smooth progression to International A Level

Our International GCSE qualifications enable successful progression to International A Level. Through our World Class Qualification development process, we have consulted with International Advanced Level and GCE A Level teachers as well as higher education professors to validate the appropriateness of the qualification, including its content, skills development and assessment structure. There is progression of content and Assessment Objectives from International GCSE to International A Level.

In addition, the question styles we use (a mixture including multiple-choice, short-answer questions, calculations and extended open-response questions) prepare students for more advanced questions at International A Level.

Teacher confidence

The specification provides consistent guidance and detail so teachers have clarity on what they need to teach and to what depth. For example, in the Biology specification:

- 2.7 *identify the chemical elements present in carbohydrates, proteins and lipids (fats and oils)* means students only need to be able to **identify** the chemical elements but not describe or explain them.
- 2.10 *understand the role of enzymes as biological catalysts in metabolic reactions* means they will need to be able to **describe** and **explain** the role of enzymes as biological catalysts.



Modular and linear assessment routes

Choose a linear or modular assessment approach

International GCSE success is different for every student. Doing all the assessment at the end works well for many, which is why we continue to offer our trusted linear approach. We also know that spreading the exam pressure across modular unit assessments that can be taken in any exam series works better for others. This is why Pearson Edexcel now offers a choice of modular or linear assessment.

Modular International GCSE (9–1) Biology, Chemistry, Physics and Science (Double Award)

International GCSE Biology, Chemistry, Physics and Science (Double Award) are available as either modular or linear qualifications.

International GCSE Human Biology and Science (Single Award) are available as a linear qualifications only.

The modular assessment route is only available to schools outside of the UK.

How modular International GCSEs work

Units can be assessed in any exam series

With a modular route, there are no restrictions on students taking units together; all units can be treated separately, and they can be taken in any International GCSE exam series. All exam papers for modular International GCSEs are at the same standard as the exam papers on the linear route.

No time limits to the qualification

Students can take and re-sit individual unit assessments in any series. This means students have more opportunities to get feedback to improve their performance and get the grades they need to progress.

Students ‘cash in’ unit results when ready

Once a student has all their unit results for the qualification they are taking, they exchange those for a grade – this is called ‘cashing in’. To cash in, all units must have been entered.



The benefits of a modular route

The modular International GCSE route provides learners with a sensible and authentic form of assessment that reflects how today’s students sit other high stakes assessments in their lives, (i.e., when they are ready), such as driving tests, or tests of English proficiency.

Spreading their examination load across exam series provides more opportunities to demonstrate their skills and abilities and to receive feedback to help improve their performance and secure the overall grades they need to progress.

It can also help reduce the mental load and stress at exam time by allowing learners to focus on one year of curriculum content at a time and spread out their high stakes exams over two years and multiple exam series. It also allows learners to take advantage of multiple re-sit opportunities if needed.

The benefits of a linear route

Whilst the modular approach works well for students who want to spread the exam load and bank their performance throughout their studies, doing the exam all in one go at the end of the period of study works well for others.

The linear approach means assessments for all units are taken together in one exam series so students study all the content and then prepare for all the assessments at the end of their period of study, rather than a more continuous pattern of study and assessment.

What this means for you

We are the only awarding organisation to offer a linear and modular route for International GCSEs and parity between the two. You can choose the right assessment approach to benefit your students and to help create a compelling competitive advantage for your school. If you choose a modular route, we will support you in moving to this approach.

The choice is yours though! If you are happy with the linear approach, there is no need to move to a modular route; our linear International GCSEs will continue to be offered and taken widely by students around the world.



Biology: a closer look

TRIPLE AWARD

100%
written exam
No practical
coursework

A choice of assessment routes for Pearson Edexcel International GCSE (9–1) Biology

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. If you are already offering Pearson Edexcel International GCSE linear this will continue to be offered and remain exactly as it is.

Students taking the linear approach will have studied all the content before the exam so our linear specification is structured in a way where all topics can be assessed in both exam papers.

Examinations on both routes contain a mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions. A calculator may be used in the examinations.

Linear exam structure and content summary

Paper 1: Biology	Paper 2: Biology
2-hour written examination.	1-hour and 15-minute written examination.
The total number of marks is 110, 61.1% of the total International GCSE.	The total number of marks is 70, 38.9% of the total International GCSE.
Each paper contributes 50% of the qualification. Content summary Assesses core content that is NOT in bold and does not have a 'B' prefix. Questions may come from any topic area across the specification. - The nature and variety of living organisms - Structures and functions in living organisms - Reproduction and inheritance - Ecology and the environment - Use of biological resources	Content summary Assesses all the content including content that is in bold and has a 'B' prefix . Questions may come from any topic area across the specification. Bold statements cover some sub-topics in greater depth. See page 9 of the Biology specification for the detailed content breakdown.

May/June
and
November
exam series

Modular exam structure and content summary

Unit 1: Biology	Unit 2: Biology
1-hour and 40-minute written examination.	1-hour and 40-minute written examination.
The total number of marks is 90, 50% of the total International GCSE.	The total number of marks is 90, 50% of the total International GCSE.
Content summary Assesses content listed below, including content that is in bold and has a 'B' reference . Questions may come from any topic area listed below. - The nature and variety of living organisms: Part 1 - Characteristics of living organisms - Variety of living organisms - Structures and functions in living organisms: Part 1 - Level of organisation - Cell structure - Biological molecules - Movement of substances into and out of cells - Nutrition - Respiration - Gas exchange	Content summary Assesses content listed below, including content that is in bold and has a 'B' reference . Questions may come from any topic area listed below. - Structures and functions in living organisms: Part 2 - Transport - Excretion - Co-ordination and response - Reproduction and inheritance - Reproduction - Inheritance - Ecology and the environment - The organism in the environment - Feeding relationships - Cycles within ecosystems - Human influences on the environment - Use of biological resources - Food production - Selective breeding - Genetic modification (genetic engineering) - Cloning

May/June
and
November
exam series



Chemistry: a closer look

TRIPLE AWARD

100%
written exam
No practical
coursework

A choice of assessment routes for Pearson Edexcel International GCSE (9–1) Chemistry

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. If you are already offering Pearson Edexcel International GCSE linear this will continue to be offered and remain exactly as it is.

Students taking the linear approach will have studied all the content before the exam so our linear specification is structured in a way where all topics can be assessed in both exam papers.

Examinations on both routes contain a mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions. A calculator may be used in the examinations.

Linear exam structure and content summary

Paper 1: Chemistry	Paper 2: Chemistry
2-hour written examination.	1-hour and 15-minute written examination.
The total number of marks is 110, 61.1% of the total International GCSE.	The total number of marks is 70, 38.9% of the total International GCSE.
Content summary 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. 1. Principles of chemistry 2. Inorganic chemistry 3. Physical chemistry 4. Organic chemistry	Content summary Assesses all the content including content that is in bold and has a 'C' prefix . Questions may come from any topic area across the specification. Bold statements cover some sub-topics in greater depth. See page 9 of the Chemistry specification for the detailed content breakdown.

May/June
and
November
exam series

Modular exam structure and content summary

Unit 1: Chemistry	Unit 2: Chemistry
1-hour and 40-minute written examination.	1-hour and 40-minute written examination.
The total number of marks is 90, 50% of the total International GCSE.	The total number of marks is 90, 50% of the total International GCSE.
Content summary Assesses content listed below, including content that is in bold and has a 'C' reference . Questions may come from any topic area listed below. 1: Principles of chemistry: Part 1 a. States of matter b. Elements, mixtures & compound c. Atomic structure d. Periodic table e. Chemical formulae, equations & calculations 2: Inorganic chemistry: Part 1 a. Reactivity series b. Extraction and uses of metals c. Acids, alkalis and titrations d. Acids, bases and salt preparations 3: Physical chemistry: Part 1 a. Energetics 4: Organic chemistry: Part 1 a. Introduction b. Crude oil c. Alkanes d. Alkenes	Content summary Assesses content listed below, including content that is in bold and has a 'C' reference . Questions may come from any topic area listed below. 5: Principles of chemistry: Part 2 d. Periodic table (note that this is the same content from 1. Principles of chemistry: Part 1) e. Chemical formulae, equations & calculations (note that this is the same content from 1. Principles of chemistry: Part 1) f. Ionic bonding g. Covalent bonding h. Metallic bonding i. Electrolysis 6: Inorganic chemistry: Part 2 e. Group 1 f. Group 7 g. Gases in the atmosphere h. Chemical tests 7: Physical chemistry: Part 2 b. Rates of reaction c. Reversible reactions and equilibrium 8: Organic chemistry: Part 2 e. Alcohols f. Carboxylic acids g. Esters h. Synthetic polymers

May/June
and
November
exam series



Physics: a closer look

TRIPLE AWARD

100%
written exam
No practical
coursework

A choice of assessment routes for Pearson Edexcel International GCSE (9–1) Physics

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. If you are already offering Pearson Edexcel International GCSE linear this will continue to be offered and remain exactly as it is.

Students taking the linear approach will have studied all the content before the exam so our linear specification is structured in a way where all topics can be assessed in both exam papers.

Examinations on both routes contain a mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions. A calculator may be used in the examinations.

Linear exam structure and content summary

Paper 1: Physics	Paper 2: Physics
2-hour written examination.	1-hour and 15-minute written examination.
The total number of marks is 110, 61.1% of the total International GCSE.	The total number of marks is 70, 38.9% of the total International GCSE.
Content summary Assesses core content that is NOT in bold and does not have a 'P' prefix. Questions may come from any topic area across the specification. - Forces and motion - Electricity - Waves - Energy resources and energy transfer - Solids, liquids and gases - Magnetism and electromagnetism - Radioactivity and particles - Astrophysics	Content summary Assesses all the content including content that is in bold and has a 'P' prefix. Questions may come from any topic area across the specification. Bold statements cover some sub-topics in greater depth. See page 10 of the Physics specification for the detailed content breakdown.

May/June
and
November
exam series

Modular exam structure and content summary

Unit 1: Physics	Unit 2: Physics
1-hour and 40-minute written examination.	1-hour and 40-minute written examination.
The total number of marks is 90, 50% of the total International GCSE.	The total number of marks is 90, 50% of the total International GCSE.
Content summary Assesses content listed below, including content that is in bold and has a 'P' reference. Questions may come from any topic area listed below. - Forces and motion - Units - Movement and position - Forces, movement, shape and momentum - Electricity - Units - Mains electricity - Energy and voltage circuits - Electric charge - Energy resources and energy transfer - Units - Energy transfers - Work and power - Energy resources and electrical generation - Solids, liquids, and gases: Part 1 - Units - Density and pressure - Change of state	Content summary Assesses content listed below, including content that is in bold and has a 'P' reference. Questions may come from any topic area listed below. - Waves - Units - Properties of waves - The electromagnetic spectrum - Light and sound - Solids, liquids and gases: Part 2 - Units (note that this is the same content from 4. Solids, liquids and gases: Part 1) - Ideal gas molecules - Magnetism and electromagnetism - Units - Magnetism - Electromagnetism - Electromagnetic induction - Radioactivity and particles - Units - Radioactivity - Fission and fusion - Astrophysics - Units - Motion in the universe - Stellar evolution - Cosmology

May/June
and
November
exam series



Science (Double Award): a closer look

100%
written exam
No practical
coursework

A choice of assessment routes for Pearson Edexcel International GCSE (9–1) Science (Double Award)

This qualification is for students and schools who wish to study all three sciences but in the curriculum time of two International GCSEs. Students study two-thirds of the content of each of Biology, Chemistry and Physics International GCSE, are assessed separately on the three sciences, and are awarded two International GCSE grades in Science.

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. If you're already offering Pearson Edexcel International GCSE linear this will continue to be offered and remain exactly as it is.

Students taking the linear approach will have studied all the content before the exam so our linear specification is structured in a way where all topics can be assessed in both exam papers.

Examinations on both routes contain a mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions. A calculator may be used in the examinations.

Teachers can co-teach with Biology, Chemistry and Physics as they will cover identical material examined in Paper 1.



Linear exam structure and content summary

Paper 1: Biology	Paper 2: Chemistry	Paper 3: Physics
2-hour written examination.	2-hour written examination.	2-hour written examination.
The total number of marks is 110, 33.3% of the total International GCSE.	The total number of marks is 110, 33.3% of the total International GCSE.	The total number of marks is 110, 33.3% of the total International GCSE.
Content summary Topics covering core content areas: 1. The nature and variety of living organisms 2. Structures and functions in living organisms 3. Reproduction and inheritance 4. Ecology and the environment 5. Use of biological resources	Content summary Topics covering core content areas: 1. Principles of chemistry 2. Inorganic chemistry 3. Physical chemistry 4. Organic chemistry May/June and November exam series	Content summary Topics covering core content areas: 1. Forces and motion 2. Electricity 3. Waves 4. Energy resources and energy transfers 5. Solids, liquids and gases 6. Magnetism and electromagnetism 7. Radioactivity and particles 8. Astrophysics

Modular exam structure and content summary

(Double Award) (Modular) consists of six externally-assessed papers. Unit assessments can be sat and resat in any order.

Biology: Unit 1	Biology: Unit 2	Chemistry: Unit 3
1-hour 10 minute written examination.	1-hour 10 minute written examination.	1-hour 10 minute written examination.
The total number of marks is 60, 16.67% of the total International GCSE.	The total number of marks is 60, 16.67% of the total International GCSE.	The total number of marks is 60, 16.67% of the total International GCSE.
Content summary 1: The nature and variety of living organisms a. Characteristics of living organisms b. Variety of living organisms 2: Structures and functions in living organisms: Part 1 a. Level of organisation b. Cell structure c. Biological molecules d. Movement of substances into and out of cells e. Nutrition f. Respiration g. Gas exchange	Content summary 3: Structures and functions in living organisms : Part 2 h. Transport i. Excretion j. Co-ordination and response 4: Reproduction and inheritance a. Reproduction b. Inheritance 5: Ecology and the environment a. The organism in the environment b. Feeding relationships c. Cycles within ecosystems d. Human influences on the environment 6: Use of biological resource a. Food production b. Selective breeding c. Genetic modification (genetic engineering)	Content summary 1: Principles of chemistry: Part 1 a. States of matter b. Elements, mixtures & compound c. Atomic structure d. Periodic table e. Chemical formulae, equations & calculations 2: Inorganic chemistry: Part 1 a. Reactivity series b. Acids, alkalis and titrations c. Acids, bases and salt preparations 3: Physical chemistry: Part 1 a. Energetics 4: Organic chemistry: Part 1 a. Introduction b. Crude oil c. Alkanes d. Alkenes

May/June
and
November
exam series

The linear and modular routes are designed provide the same level of demand overall while providing candidates with a choice of assessment approaches. Linear gives the option for fewer, longer exam papers with a larger amount of content covered in each. Modular gives the option for more, shorter exam papers which allow for more focused revision of certain topics.

Modular exam structure and content summary

(Double Award) (Modular) consists of six externally-assessed papers. Unit assessments can be sat and resat in any order.

Chemistry: Unit 4	Physics: Unit 5	Physics: Unit 6
1-hour 10 minute written examination.	1-hour 10 minute written examination.	1-hour 10 minute written examination.
The total number of marks is 60, 16.67% of the total International GCSE.	The total number of marks is 60, 16.67% of the total International GCSE.	The total number of marks is 60, 16.67% of the total International GCSE.
Content summary 5: Principles of chemistry: Part 2 d. periodic table (note that this is the same content from 1. Principles of chemistry: Part 1) e. Chemical formulae, equations & calculations (note that this is the same content from 1. Principles of chemistry: Part 1) f. Ionic bonding g. Covalent bonding 6: Inorganic chemistry: Part 2 d. Group 1 e. Group 7 f. Gases in the atmosphere g. Chemical tests 7: Physical chemistry: Part 2 b. Rates of reaction c. Reversible reactions and equilibrium 8: Organic chemistry: Part 2 e. Synthetic polymers	Content summary 1: Forces and motion a. Units b. Movement and position c. Forces, movement, shape and momentum 2: Electricity a. Units b. Mains electricity c. Energy and voltage circuits 3: Energy resources and energy transfer a. Units b. Energy transfers c. Work and power 4: Solids, liquids, and gases: Part 1 a. Units b. Density and pressure	Content summary 5: Waves a. Units b. Properties of waves c. The electromagnetic spectrum d. Light and sound 6: Solids, liquids and gases: Part 2 a. Units (note that this is the same content from 4. Solids, liquids and gases: Part 1) c. Ideal gas molecules 7: Magnetism and electromagnetism a. Units b. Magnetism c. Electromagnetism d. Electromagnetism induction 8: Radioactivity and particles a. Units b. Radioactivity c. Fission and fusion 9: Astrophysics a. Units b. Motion in the universe c. Stellar evolution

The linear and modular routes are designed provide the same level of demand overall while providing candidates with a choice of assessment approaches. Linear gives the option for fewer, longer exam papers with a larger amount of content covered in each. Modular gives the option for more, shorter exam papers which allow for more focused revision of certain topics.

Science (Single Award): a closer look

100%
written exam
No practical
coursework

A broad exposure to three sciences to gain one 9–1 grade

This qualification is for students and schools who wish to study all three sciences but in the curriculum time of one International GCSE. Students study one-third of the content of each of Biology, Chemistry and Physics International GCSE, are assessed separately on the three sciences, and are awarded one International GCSE grade in Science.

It is designed for students and centres with a very restrictive timetable or who are not required to study individual sciences. Students are unlikely to progress into further scientific study but gain a solid overview of Biology, Chemistry and Physics at International GCSE level.

Pearson Edexcel International GCSE (9–1) Science (Single Award) is not currently available in modular format.

Exam structure and content summary

Paper 1: Biology	Paper 2: Chemistry	Paper 3: Physics
1-hour and 10 minutes written examination.	1-hour and 10 minutes written examination.	1-hour and 10 minutes written examination.
The total number of marks is 60, 33.3% of the total International GCSE.	The total number of marks is 60, 33.3% of the total International GCSE.	The total number of marks is 60, 33.3% of the total International GCSE.
Content summary Topics covering core content areas: - The nature and variety of living organisms - Structures and functions in living organisms - Reproduction and inheritance - Ecology and the environment - Use of biological resources	Content summary Topics covering core content areas: - Principles of chemistry - Inorganic chemistry - Physical chemistry - Organic chemistry	Content summary Topics covering core content areas: - Forces and motion - Electricity - Waves - Energy resources and energy transfers - Solids, liquids and gases - Magnetism and electromagnetism - Radioactivity and particles - Astrophysics

Human Biology: a closer look

100%
written exam
No practical
coursework

Preparation for advanced studies

This course gives students the opportunity to develop skills that will support progression to further study in biology and a range of other subjects, in biological sciences and elsewhere.

It will equip students with a comprehensive understanding of human biology, enabling them to apply biological principles in diverse contexts, develop practical skills within ethical boundaries, critically evaluate information, and effectively communicate findings, preparing them for further studies in biology and related fields like health and social care.

Pearson Edexcel International GCSE (9–1) Human Biology is not currently available in modular format.

Exam structure and content summary

Paper 1: Human Biology	Paper 2: Human Biology
1-hour 45-minute written examination.	1-hour 45-minute written examination.
The total number of marks is 90, 50% of the total International GCSE.	The total number of marks is 90, 50% of the total International GCSE.
Content summary - Cells and tissues - Biological molecules - Movement of substances in and out of cells - Bones, muscles and joints - Coordination - Nutrition and energy - Respiration - Gas exchange - Internal transport - Homeostatic mechanisms - Reproduction and heredity - Disease Assessment	Content summary Assessment may be on any area of content in the opposite box.

May/June
and
November
exam series

Supporting you at every stage

We provide an unparalleled level of support services, tools, resources and training alongside our qualifications, making teachers and students lives easier at every stage.

At a glance: support for you at every stage			
FREE resources and support	Planning, teaching & learning	Exam preparation and assessment	Results support
Getting started guide	✓		
Training events (face-to-face and 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		✓	
ResultsPlus		✓	✓
Access to Scripts service (ATS)			✓

Additional paid for resources available for Biology, Chemistry, Physics, Human Biology and Double Science			
Curriculum-matched Student Books with ActiveBooks	✓	✓	
Teaching Hub*	✓	✓	

*Available for selected subjects



Pre and post exam support for your educators

Supporting you every step of the way

As a Pearson Edexcel centre, you will have access to a full range of integrated support services, tools and resources to support the delivery of your International GCSEs, including:

Easy, all year-round access

Our specifications, sample assessment materials and teaching resources are easily available online.

Training for International Centres

We offer a range of face-to-face and online training events around the world for teachers, exams officers and other centre staff.

- Teacher training in-person and online includes free 'Welcome to Pearson' sessions to help your educators make the most of our qualifications.
- As well as on-demand courses for exams officers, we host monthly live online events that go through news, updates and areas they may need support in the coming months.

Free, expert subject support

Our subject advisors are on hand to help with any subject-specific queries you may have and are available to support your educators throughout the year. They provide fast, reliable help and aim to answer all emailed questions within 48 hours and resolve 90% of issues phoned in on the first call.

Email TeachingScience@pearson.com or call +44 (0) 344 463 2535

examWizard

A huge online bank of past papers and mark schemes to create topic tests and revision activities in minutes. Available for Biology, Chemistry and Physics, you can:

- use existing mark schemes for accurate marking
- use existing examiner reports for insight
- use the results to understand where students need more support, informing teaching strategies.

Unlike other similar question banks, examWizard is:

- available free to all Pearson Edexcel centres
- updated with the latest questions faster, following the exam series
- a one stop shop for assessment material with access to whole past papers and examiner reports as well as the ability to easily construct bespoke ones with content tagged to specific attributes.

ResultsPlus

Our popular online results analysis tool, also includes an insightful group analysis service. Unlike similar tools available from other awarding organisations, ResultsPlus:

- analysis is available from results day
- has a mock exam service which makes the service useful throughout the school year and not just for post-results
- tracks performance over time with historical records
- allows you to view reports for individual, cohort or teacher created groups
- benchmarks performance against other Pearson Edexcel schools in their country
- provides student access to results using Results Plus direct.

Local, experienced Pearson Consultants

There to support you every step of the way.



Access to Scripts

Our service allows you to view your candidates' marked exam papers for free online or as downloaded PDFs, providing a rich source of information to inform future teaching plans and approaches. Access to Scripts gives you:

- greater visibility and transparency of marking
- a better understanding of marking before requests for enquiries about results are made
- support 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, during a defined window, you can view and download scripts which have been marked online free of charge from our self-service portal.

A valued support partner

“One of the good features of ResultsPlus is that it provides the top ten questions that students scored poorly in, so we as the lecturers can actually identify the topics that students found difficult and can incorporate a different approach when teaching our current students.”

Dr Khong Yoke Kum, A Levels Department, HELP Academy, Malaysia

“I used the website with its course outlines, past papers, summaries of key points, revision notes and mark schemes... they provide great tips about possible exam questions and how you could answer them.”

Alexia Kattavenos, student, The Nicosia Grammar School, Cyprus

What this means for you

We will support your educators to deliver an outstanding teaching and learning experience for every student taking Pearson Edexcel International GCSEs.

With examWizard, they will be able to prepare topic tests and revision activities based on past exam questions to help prepare students for their final assessments, and using ResultsPlus, they will be able to analyse their mock results to pinpoint where they may need further support and can then tailor their teaching to support them.

Post exams, our Access to Scripts service will allow your educators to review students' exam papers for free, providing greater visibility and a deeper understanding of individual students' exam performance and helping them identify skills gaps to tailor teaching plans for future cohorts.

“Because of ResultsPlus, students can learn about their mistakes and rectify.”

Kanagambigai, Chief Counsellor, A levels Department, HELP Academy, Malaysia commenting on the ResultsPlus mocks service.



Teaching and learning resources

Written specifically to support our qualifications

Developed for the Pearson Edexcel International GCSE (9–1) Science, these resources have progression, international relevance, exam practice and support at their core. They provide comprehensive coverage of the new specifications and are designed to support students with the best preparation possible for the examination.

What’s available

For learners

- **Student Book:** Printed Student Book with 3-year digital access to an ActiveBook, a digital version.
- **International GCSE Lab Books:** Instructions and writing frames for the Core Practicals, as well as practical skills analysis and evaluation questions and answers.

For educators

- Biology, Chemistry and Physics are supported by our brand-new **Teaching Hubs** platform, designed to save teachers time and help them deliver high-quality lessons.
- **Online Teacher Resource Packs** provide further planning, teaching and assessment support for the Single Science Award and Double Science Award resources.

Prepare students to start their International GCSE Science courses with confidence

Pearson Power Starters are fast, focused online programmes, specifically written to prepare students to begin their International GCSE Biology, Chemistry, Physics or Science Double Award.

The perfect summer school booster to get all students starting the new academic year on track, the programme enables you to quickly identify gaps in learning and then in just a matter of weeks ensure your students have all the skills and knowledge they need for a smooth transition.

The same resources can be used for either the linear or modular routes.

Title	ISBN
Biology Student Book	978 0 435185 08 4
Biology Lab Book	978 1 292394 92 3
Biology Teaching Hub	978 1 292725 05 5
Chemistry Student Book	978 0 435185 16 9
Chemistry Lab Book	978 1 292394 90 9
Chemistry Teaching Hub	978 1 292725 04 8
Physics Student Book	978 0 435185 27 5
Physics Lab Book	978 1 292394 91 6
Physics Teaching Hub	978 1 292456 75 1
Human Biology Student Book	978 0 435184 98 8
Human Biology Online Teacher Resource Pack	978 0 435191 37 5
Science Double Award Student Book	978 0 435185 28 2
Science Double Award Lab Book	978 1 292394 95 4
Science Double Award Online Teacher Resource Pack	978 0 435185 31 2
Science Single Award Student Book	978 1 292306 21 6
Science Single Award Lab Book	978 1 292394 94 7
Science Single Award Online Teacher Resource Pack	978 1 292307 01 5



Curriculum-matched student books

Reviewed by a language specialist to ensure the book is written in a **clear and accessible style**, and including glossaries of specialist Science vocabulary.

44 ANIMAL PHYSIOLOGY

BREATHING AND GAS EXCHANGE

▲ Figure 3.13 Death rates from lung cancer for smokers, non-smokers and ex-smokers.

CARBON MONOXIDE IN SMOKE

One of the harmful chemicals in cigarette smoke is the poisonous gas **carbon monoxide**. When this gas is breathed in with the smoke, it enters the bloodstream and interferes with the ability of the blood to carry oxygen. Oxygen is carried around in the blood in the red blood cells, attached to a chemical called **haemoglobin** (see Chapter 5). Carbon monoxide can combine with the haemoglobin much more tightly than oxygen can, forming a compound called **carboxyhaemoglobin**. The haemoglobin will combine with carbon monoxide in preference to oxygen. When this happens, the blood carries much less oxygen around the body. Carbon monoxide from smoking is also a major cause of heart disease (Chapter 5).

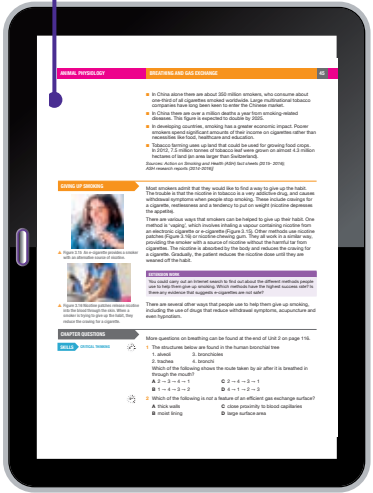
If a pregnant woman smokes, she will be depriving her unborn **fetus** of oxygen (Figure 3.14). This has an effect on its growth and development, and leads to the mass of the baby at birth being lower, on average, than the mass of babies born to non-smokers.

▲ Figure 3.14 Smoking during pregnancy affects the growth and development of the baby.

SOME SMOKING STATISTICS

- It is estimated that there are over 1 billion smokers worldwide. In 2014 they consumed 5.8 trillion cigarettes.
- Every year nearly 6 million people are killed by tobacco-related illnesses. If the current trend continues, by 2030 this will rise to 8 million deaths per year and 80% of these premature deaths will be in developing countries.
- Smoking causes almost 80% of deaths from lung cancer, 80% of deaths from bronchitis and emphysema, and 14% of deaths from heart disease.
- More than a quarter of all cancer deaths are attributable to smoking. These include cancer of the lung, mouth, lip, throat, **bladder**, kidney, pancreas, stomach, liver and cervix.
- While demand for tobacco has steadily fallen in developed countries like the UK, cigarette consumption is being increasingly concentrated in the developing world.
- 9.6 million adults in the UK smoke cigarettes. 20% of men and 17% of women. However, 22% of women and 30% of men in the UK are now ex-smokers. Surveys show that about two-thirds of current smokers would like to stop smoking.
- It is estimated that worldwide, 31% of men and 8% of women are smokers. Consumption varies widely between different countries, but generally the areas of the world where there has been no change in consumption, or an increase, are southern and central Asia, Eastern Europe and Africa.

The Student Book provides 3 year access to an **ActiveBook**, a digital version of the Student Book, which can be accessed online, anytime, anywhere supporting learning beyond the classroom.



Specifically developed for international learners, with appropriate **international content**.

Chapter Questions test knowledge of the topic in that chapter.

The embedded **transferable skills**, needed for progression to higher education and employment, are signposted so students understand, and can engage with, the skills they're gaining.

Progression icons show the level of difficulty according to the Pearson International GCSE Science Progression Scale.

GIVING UP SMOKING



▲ Figure 3.15 An e-cigarette provides a smoker with an alternative source of nicotine.



▲ Figure 3.16 Nicotine patches release nicotine into the blood through the skin. When a smoker is trying to give up the habit, they reduce the craving for a cigarette.

CHAPTER QUESTIONS

SKILLS CRITICAL THINKING

Most smokers admit that they would like to find a way to give up the habit. The trouble is that the nicotine in tobacco is a very addictive drug, and causes withdrawal symptoms when people stop smoking. These include cravings for a cigarette, restlessness and a tendency to put on weight (nicotine depresses the appetite).

There are various ways that smokers can be helped to give up their habit. One method is 'vaping', which involves inhaling a vapour containing nicotine from an electronic cigarette or e-cigarette (Figure 3.15). Other methods use nicotine patches (Figure 3.16) or nicotine chewing gum. They all work in a similar way, providing the smoker with a source of nicotine without the harmful tar from cigarettes. The nicotine is absorbed by the body and reduces the craving for a cigarette. Gradually, the patient reduces the nicotine dose until they are weaned off the habit.

EXTENSION WORK

You could carry out an Internet search to find out about the different methods people use to help them give up smoking. Which methods have the highest success rate? Is there any evidence that suggests e-cigarettes are not safe?

There are several other ways that people use to help them give up smoking, including the use of drugs that reduce withdrawal symptoms, acupuncture and even hypnosis.

More questions on breathing can be found at the end of Unit 2 on page 116.

- 1 The structures below are found in the human bronchial tree
1. alveoli 3. bronchioles
2. trachea 4. bronchi
Which of the following shows the route taken by air after it is breathed in through the mouth?
A 2 → 3 → 4 → 1 C 2 → 4 → 3 → 1
B 1 → 4 → 3 → 2 D 4 → 1 → 2 → 3
- 2 Which of the following is *not* a feature of an efficient gas exchange surface?
A thick walls C close proximity to blood capillaries
B moist lining D large surface area

Teaching Hubs

Spend less time planning and more time teaching

Designed to help your teachers spend less time planning and more time teaching, our brand new Teaching Hubs for Biology, Chemistry, Physics, Double and Single Science provide everything educators need to deliver lessons to a consistently high standard, with complete coverage of all guided teaching hours, along with exam-preparation resources and CPD support.

Easy to use, and ideal for both specialist and non-specialists, this next generation online platform is available as an annual subscription and helps your teachers to:

- **Spend less time planning:** with schemes of work that break the International GCSE Science specifications into hour-long sessions, 360 detailed lesson plans for each hour of teaching and time allocations to suit different lesson lengths, as well as in-depth teacher guidance.

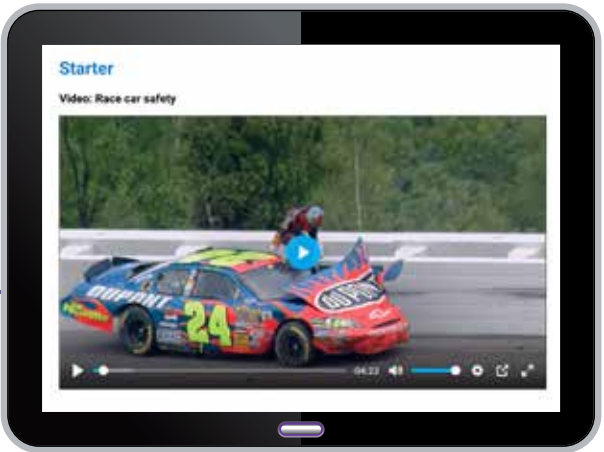
- **Deliver great International GCSE lessons:** with thousands of front-of-class resources linked from the lesson plans – including interactive exercises, animations and videos – plus an overview page containing all the top-level information about the lesson as well as links to the textbook.
- **Get every class exam-ready:** with lesson plans giving partially scripted instructions for communicating the new learning points and correcting misconceptions, plus interactive exam-preparation resources ideal to further illustrate complex concepts and consolidate learning.

Available for Biology, Chemistry, Physics, Science (Double Award) and Science (Single Award)

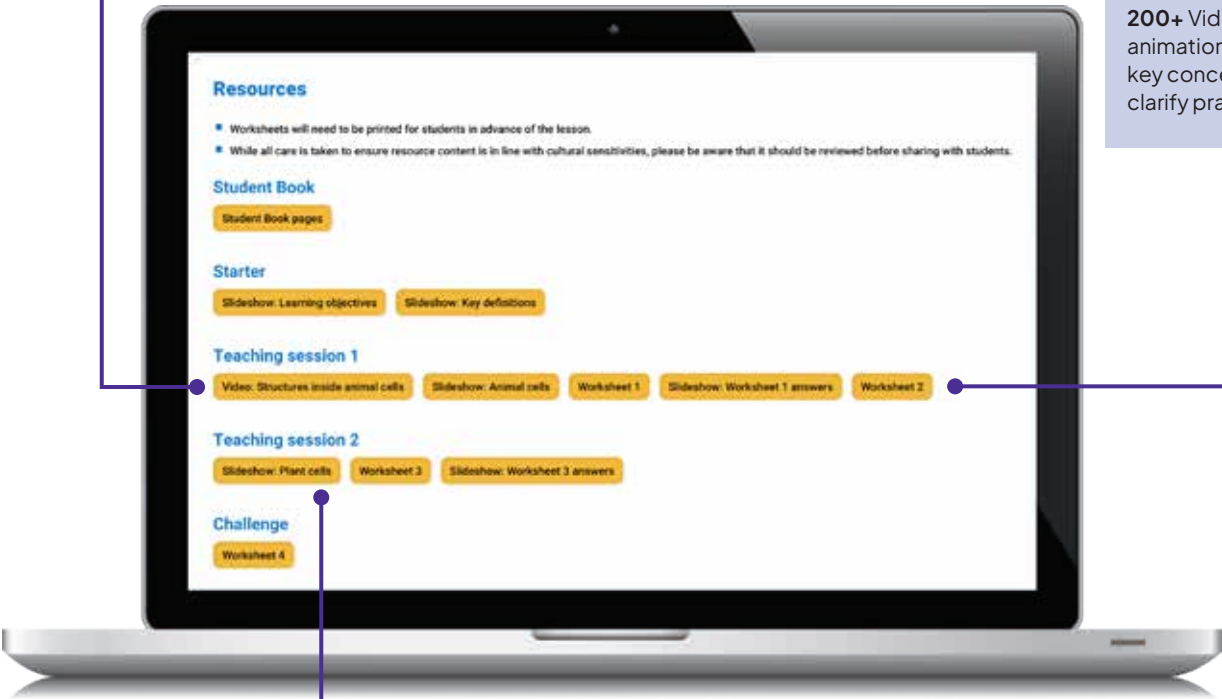


Thousands of lesson resources at the click-of-a-button

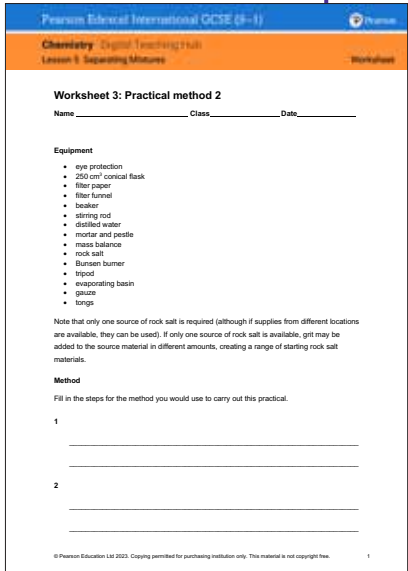
A huge range of resources for student engagement. All relevant lesson resources are clearly indicated within each lesson plan and all hyperlinked to save you time searching.



200+ Videos and animations to explain key concepts and clarify practical work



1500+ slideshows with activities, worked examples and illustrations



1000+ downloadable worksheets and homework sheets



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