

Your guide to Pearson Edexcel International Advanced Level (IAL)

Science: Biology, Chemistry





First teaching September 2018

Welcome

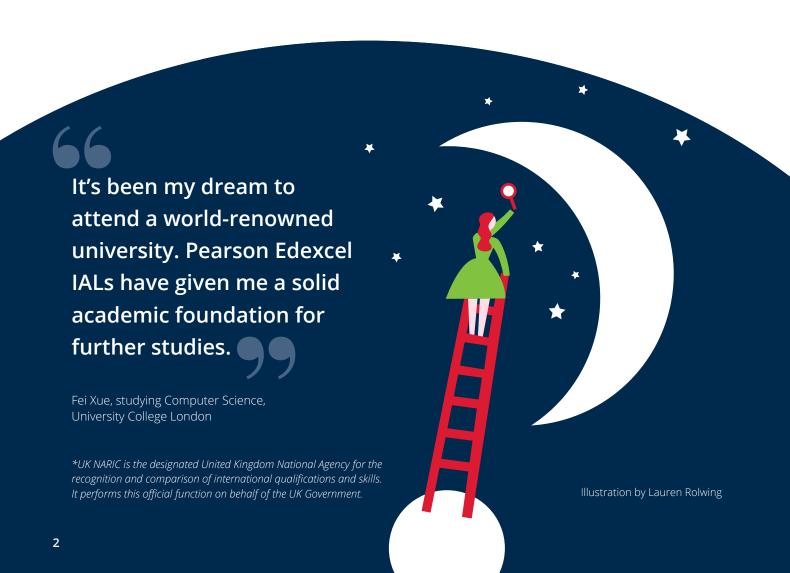
Pearson Edexcel International Advanced Level (IAL) qualifications have been designed with the global learner in mind. They differ from A levels in that they have a flexible, modular structure, but maintain the rigorous standards of all Pearson Edexcel qualifications and are comparable to the UK A level, as confirmed by NARIC*.

Developed in consultation with the international school community, including a large number of teachers and university lecturers, these globally recognised qualifications open doors to universities worldwide, giving students the necessary skills to support progression to higher and further study.

Available in 21 popular subjects and designed to be engaging for international learners, they offer progression from International GCSEs to equip students with the knowledge and skills they need for a successful future. In 2018 we launched 8 updated subjects – Biology, Chemistry, Physics, Business, Economics, Mathematics, Further Mathematics and Pure Mathematics and also a brand new Information Technology qualification, which our schools started teaching in September 2018.

IAL qualifications are not available in the UK, the Channel Islands, the Isle of Man or in British Armed Forces schools overseas.

For further information, updates and support, visit qualifications.pearson.com/IAL



Why choose Pearson Edexcel IALs?





Flexible and modular structure

The flexible modular approach takes a synoptic approach to assessment, which means learners are examined on their learning from each unit and are also able to demonstrate their knowledge and understanding across the whole subject.

Unlike a linear structure, where assessment is taken at the end of a two year course, the results from each module provide formal feedback throughout the course. This means learners can quickly grasp the standard required to reach the level they are aiming for. This understanding motivates students to improve, and builds a sense of ownership through bite-size, short-term goals.



Multiple examination opportunities

Examinations are available for many subjects in January, June and October, with all subjects offering at least two assessment opportunities as standard*. As exams are spread throughout the course, there are less high stakes assessments, enabling learners to focus their revision appropriately. Learners can resit individual unit examinations.



Accessible examination papers

At Pearson Edexcel, we develop our examination papers over a two-year period. The papers go through a rigorous world class assessment design process, which ensures that the content is relevant for international learners, and there is a clear and consistent relationship between command words, marks and skills. With logical progression of difficulty throughout and consistency in template and design, our question papers are clear and provide suitable challenge and support for students of all ability ranges.



IAS results contribute to IAL grade

International AS qualifications can be taken separately as a stand alone qualification, or used as a stage on the way to completing an International Advanced Level qualification. This provides international schools and learners with greater choice and flexibility to meet their needs and aspirations.



Recognised by universities worldwide

Fully comparable to UK reformed GCE A levels, as confirmed by NARIC, Pearson Edexcel IALs provide learners with access to the world's top universities and prestigious employment opportunities. They are recognised by leading universities across the world, including Oxford, Cambridge, Columbia, Yale, MIT, Caltech, Hong Kong / China University of Science and Technology and the National University of Singapore.



Internationally relevant content

Pearson Edexcel IAL qualifications and accompanying published resources contain international content where possible, such as topic themes, examples, case studies and photos, making content more relevant and engaging for all learners. Language is also reviewed by a specialist to ensure materials are written with EAL learners in mind, in a clear and accessible style.

^{*}With the exception of IAL Information Technology which offers June examination only.

Pearson Edexcel IAL Overview: Biology, Chemistry & Physics





Containing up to date and engaging content, the Pearson Edexcel International Advanced Level qualifications in Biology, Chemistry and Physics are designed to enhance students' future educational and employment prospects. We have listened to feedback from all parts of the international school education community, including a large number of teachers and developed these qualifications to give students the necessary skills to support progression.

At a glance

The structure of these qualifications allows teachers to construct a course of study that can be taught and assessed as either:

- distinct modules of teaching and learning with related units of assessment taken at appropriate stages during the course; or, if wished,
- a linear course assessed in its entirety at the end.

An International Advanced Subsidiary qualification can be claimed as a discrete qualification on completion of the three International Advanced Subsidiary (IAS) units.

The International Advanced Level qualification can be claimed on completion of all six units in the specification.

IAS	IAL
To achieve IAS, students must complete al IAS units.	To achieve IAL, students must complete all IAS and all IA2 units.
Three IAS units: Units 1, 2 and 3.	Three IAS units: Units 1, 2 and 3 plus three IA2 units: Units 4, 5 and 6.

Content

The content has been updated from the previous Pearson Edexcel IAL qualifications in Biology, Chemistry and Physics. Each specification covers the subject's major topics. Students will also develop their practical skills.

	Topics covered: (Units 3 and 6 cover Practical Skills)	Minimum core practical activities
Biology	 Unit 1: Biological molecules, diet, transport, health Unit 2: Cells, development, biodiversity, conservation Unit 4: Energy, environment, microbiology, immunity Unit 5: Respiration, internal environment, coordination and gene technology. 	18
Chemistry	 Unit 1: Structure, bonding, introduction to organic chemistry Unit 2: Energetics, Group Chemistry, Halogenoalkanes and Alcohols Unit 4: Rates, Equilibria and Further Organic Chemistry Unit 5: Transition Metals and Organic Nitrogen Chemistry 	16
Physics	Unit 1: Mechanics and Materials Unit 2: Waves and Electricity Unit 4: Further Mechanics, Fields and Particles Unit 5: Thermodynamics, Radiation, Oscillations and Cosmology	16

See pages 7–9 for more detail on the content and assessment of each qualification.

Approach

Learners will develop their knowledge and understanding of their subject by applying the concepts in the specifications to a range of different problems, set in a variety of contexts. Problems will require the application of mathematical skills. Centres are encouraged to include additional practical activities to develop students' practical skills further.

Specifications

For further information and to download the specifications, visit:



Helping students make the best progress they can

These qualifications enable successful progression to further education courses in sciences. Through our world-class qualification development process, we have consulted with a number of universities in the UK, as well as internationally, to validate the appropriateness of these qualifications, including content, skills and assessment structure.

Aims of the Qualification

The aims and objectives of these qualifications are to enable students to develop:

- essential knowledge and understanding of different areas of the subject and how they relate to each other
- a deep appreciation of the skills, knowledge and understanding of scientific methods
- competence and confidence in a variety of practical, mathematical and problem-solving skills
- their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject.

Students will

- develop and use a range of mathematical skills that support their knowledge and understanding of their subject
- gain experience in a variety of practical techniques and procedures, which will be assessed separately in Unit 3 and Unit 6
- widen their learning through a number of key transferable skills, which may be cognitive, intrapersonal or interpersonal.



IAL Biology

Unit Overview

Unit	Unit code:	% of the qualification	% of the total IAL	Examination duration	Marks available
Unit 1: Molecules, Diet, Transport and Health	WBI11/01	40% of IAS	20%	1 hr 30 mins	80 marks
Unit 2: Cells, Development, Biodiversity and Conservation	WBI12/01	40% of IAS	20%	1 hr 30 mins	80 marks
Unit 3: Practical Skills in Biology I	WBI13/01	20% of IA2	10%	1 hr 20 mins	50 marks
Unit 4: Energy, Environment, Microbiology and Immunity	WBI14/01	40% of IA2	20%	1 hr 45 mins	90 marks
Unit 5: Respiration, Internal Environment, Coordination and Gene Technology	WBI15/01	40% of IA2	20%	1 hr 45 mins	90 marks
Unit 6: Practical Skills in Biology II	WBI16/01	20% of IA2	10%	1 hr 20 mins	50 marks

Assessment timelines

Specification	Level	Units	Jun 2019	Oct 2019	Jan 2020	Jun 2020	Oct 2020	Jan 2021
LEGACY BIOL	.OGY 20	13 SPECI	FICATION					
Biology 2013	AS	WBI01	1	Х	Х	Х	X	Х
Biology 2013	AS	WBI02	1	X	Х	Х	X	Х
Biology 2013	AS	WBI03	1	X	Х	Х	X	Х
Biology 2013	AL	WBI04	1	1	Х	1	X	Х
Biology 2013	AL	WBI05	1	1	Х	1	X	Х
Biology 2013	AL	WBI06	1	1	Х	1	X	Х
BIOLOGY 201	18 SPECI	FICATIO	N					
Biology 2018	AS	WBI11	1	1	1	1	1	1
Biology 2018	AS	WBI12	1	1	1	1	1	1
Biology 2018	AS	WBI13	1	1	1	1	1	1
Biology 2018	AL	WBI14	Х	Х	1	1	1	1
Biology 2018	AL	WBI15	Х	Х	Х	/	1	1
Biology 2018	AL	WBI16	Х	Х	Х	/	1	1

For further information and to download the specification, visit qualifications.pearson.com/ialbiology2018



IAL Chemistry

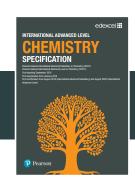
Unit Overview

Unit	Unit code:	% of the qualification	% of the total IAL	Examination duration	Marks available
Unit 1: Structure, Bonding and Introduction to Organic Chemistry	WCH11/01	40% of IAS	20%	1 hr 30 mins	80 marks
Unit 2: Energetics, Group Chemistry, Halogenoalkanes and Alcohols	WCH12/01	40% of IAS	20%	1 hr 30 mins	80 marks
Unit 3: Practical Skills in Chemistry I	WCH13/01	20% of IA2	10%	1 hr 20 mins	50 marks
Unit 4: Rates, Equilibria and Further Organic Chemistry	WCH14/01	40% of IA2	20%	1 hr 45 mins	90 marks
Unit 5: Transition Metals and Organic Nitrogen Chemistry	WCH15/01	40% of IA2	20%	1 hr 45 mins	90 marks
Unit 6: Practical Skills in Chemistry II	WCH16/01	20% of IA2	10%	1 hr 20 mins	50 marks

Assessment timelines

Specification	Level	Units	Jun 2019	Oct 2019	Jan 2020	Jun 2020	Oct 2020	Jan 2021
LEGACY CHEM	IISTRY :	2013 SPE	CIFICATIO	N				
Chemistry 2013	AS	WCH01	1	Х	X	X	X	X
Chemistry 2013	AS	WCH02	1	X	X	X	X	X
Chemistry 2013	AS	WCH03	1	X	X	Х	X	X
Chemistry 2013	AL	WCH04	1	1	Х	1	X	X
Chemistry 2013	AL	WCH05	1	1	Х	1	X	X
Chemistry 2013	AL	WCH06	1	1	X	1	X	X
CHEMISTRY 20)18 SPE	CIFICAT	ION					
Chemistry 2018	AS	WCH11	1	1	1	1	1	1
Chemistry 2018	AS	WCH12	1	1	1	1	1	1
Chemistry 2018	AS	WCH13	1	1	1	1	1	1
Chemistry 2018	AL	WCH14	X	X	1	1	1	1
Chemistry 2018	AL	WCH15	Х	Х	Х	1	1	1
Chemistry 2018	AL	WCH16	X	X	X	1	1	1

For further information and to download the specification, visit **qualifications.pearson.com/ialchemistry2018**



IAL Physics

Unit Overview

Unit	Unit code:	% of the qualification	% of the total IAL	Examination duration	Marks available
Unit 1: Mechanics and Materials	WPH11/01	40% of IAS	20%	1 hr 30 mins	80 marks
Unit 2: Waves and Electricity	WPH12/01	40% of IAS	20%	1 hr 30 mins	80 marks
Unit 3: Practical Skills in Physics I	WPH13/01	20% of IA2	10%	1 hr 20 mins	50 marks
Unit 4: Further Mechanics, Fields and Particles	WPH14/01	40% of IA2	20%	1 hr 45 mins	90 marks
Unit 5: Thermodynamics, Radiation, Oscillations and Cosmology	WPH15/01	40% of IA2	20%	1 hr 45 mins	90 marks
Unit 6: Practical Skills in Physics II	WPH16/01	20% of IA2	10%	1 hr 20 mins	50 marks

Assessment timelines

Specification	Level	Units	Jun 2019	Oct 2019	Jan 2020	Jun 2020	Oct 2020	Jan 2021
LEGACY PHYS	SICS 201	3 SPECIF	ICATION					
Physics 2013	AS	WPH01	1	Х	X	X	X	Х
Physics 2013	AS	WPH02	1	Х	X	X	X	Х
Physics 2013	AS	WPH03	1	Х	Х	X	X	Х
Physics 2013	AL	WPH04	1	1	Х	1	X	Х
Physics 2013	AL	WPH05	1	1	Х	1	X	Х
Physics 2013	AL	WPH06	1	1	Х	1	X	Х
PHYSICS 2018	8 SPECIF	ICATION	J					
Physics 2018	AS	WPH11	1	1	1	1	1	1
Physics 2018	AS	WPH12	1	1	1	1	1	1
Physics 2018	AS	WPH13	1	1	1	1	1	1
Physics 2018	AL	WPH14	X	Х	1	1	1	1
Physics 2018	AL	WPH15	Х	Х	Х	1	1	1
Physics 2018	AL	WPH16	Х	Х	Х	1	1	1



For further information and to download the specification, visit **qualifications.pearson.com/ialphysics2018**

Developing transferable skills valued by universities and employers

In recent years, universities and employers have highlighted the need for students and graduates to develop a range of transferable skills, often referred to as 'soft skills', to enable them to better meet the demands of undergraduate study and the world of work.

In fact, universities and employers consider transferable skills to be the largest skills gap overall.



1 in 6

employers have difficulty finding candidates with the skills they require¹



54%

of companies say that skills shortages impact their ability to serve their customers²



1 in 3

skills in a job posting is a "soft skill"¹



87%

of university professors do not think students have the research skills needed for degree-level study³

Pearson Edexcel International Advanced Levels (IALs) equip students with these embedded transferable skills sought after by universities and employers. They develop core competencies, such as problem-solving, critical thinking and verbal reasoning. Transferable skills are signposted in our IAL qualifications and published teaching and learning resource so students know the skills they are developing throughout their studies.

Prepare your learners for more than just a grade

We've provided **skills mapping and transferable skills subject definitions** documents for your subject area, so you can easily identify what skills can be developed in your day to day teaching. Find out more online by visiting your subject page and searching under the *Teaching and Learning materials* tab **qualifications.pearson.com/IAL**

¹ Employability - Personal & Social Capability Framework report from Pearson, 2016.

² Employability report from PSB for Pearson, 2016.

³ Bridging the Gap: Understanding the Differing Research Expectations of First-Year Students and Professors, Meg Raven, Mount Saint Vincent University, 2016.

NRC transferable skills framework

Pearson Edexcel's research team reviewed a number of skills frameworks for our qualifications, and selected the US National Research Council's (NRC) framework as being the most suitable.







Cognitive Skills

"Core skills your brain uses to think, learn and reason used to carry out any task"

Cognitive Processes and Strategies

Critical Thinking

Problem Solving

Analysis

Reasoning / Argumentation

Creativity

Creativity

Innovation









Intrapersonal skills

"This is emotional intelligence, the ability to know, understand and manage your own emotions and learning"

Intellectual **Openness**

Adaptability

Personal and Social Responsibility

Continuous Learning

Intellectual Interest and Curiosity

Interpretation

Decision Making

Adaptive Learning

Executive Function

Work Ethic / Conscientiousness

Initiative

Self-Direction

Responsibility

Perseverance

Productivity

Self-regulation (metacognition, forethought, reflection)

Ethics

Integrity

Positive Core Self Evaluation

Self-monitoring

Self-evaluation

Self-reinforcement







Interpersonal Skills

"The life skills we use everyday to communicate and interact with other people, both individually and in groups"

Teamwork and Collaboration

Communication

Collaboration

Teamwork

Co-operation

Interpersonal Skills

Empathy / Perspective Taking

Negotiation

Leadership

Responsibility

Assertive Communication

Self-Presentation

Supporting you at every stage

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

Your free subject support

Subject Advisors

Providing fast, reliable, expert help on a specific subject area of your choice. We aim to answer all emailed questions within 48 hours and resolve 90% of issues phoned in on the first call.

Contact support.pearson.com/uk/s/qualification-contactus

Pearson International Schools Community

Connect with other educators around the world, share ideas and resources and stay up to date with the latest subject developments by joining our international schools community at **community.pearsoninternationalschools.com**

At a glance: support for you at every stage						
FREE resources and support	Planning and teaching	Exam preparation and assessment	Results support			
Getting started guide	✓					
Training events (face-to-face, online & downloadable content)	✓	✓				
Subject advisor support	✓	✓	✓			
Ask the expert	√	✓	✓			
Community forums	√	✓	✓			
Scheme of Work	√					
Sample assessment materials	√	✓				
Examiner reports	1	✓	✓			
Exemplar marked responses		✓				
Past papers		✓				
examWizard		✓				
Mark schemes		✓				
ResultsPlus mock exam analysis		✓				
ResultsPlus		✓	✓			
FREE Access to Scripts service (ATS)			✓			
Additional paid for resources						
Printed Student Books and digital ActiveBooks	√	✓				
Online Teacher Resource Packs	✓	✓				

Offering more advanced support services and tools

Our technology capability also allows us to provide the following unique services and tools to teachers and students:



ResultsPlus provides detailed information on exam performance and a platform to view and compare student results – as individuals or as groups – across the world. It helps with planning improvements in teaching and learning. ResultsPlus Direct is a free online service that gives students a detailed breakdown and comparison of their performance in Pearson Edexcel exams, globally, to help them identify areas of improvement.



examWizard is our free exam preparation tool containing a bank of past Pearson Edexcel exam questions, mark schemes and examiners' reports for a range of subjects. It saves you time by enabling you to create your own mock exams, topic tests, homework or revision activities in minutes and links directly to associated examiner reports and mark schemes!



FREE Access to Scripts Service (ATS) is an online service which allows access to view electronically marked exam papers, free of charge, providing enhanced transparency and support for teachers to evaluate a student's performance on particular questions in relation to what they have been taught.



Awarding reliability. We use ePEN, our unique, image-based marking system ensuring real time monitoring, quality control and reporting to ensure the highest quality marking and provision of data for tools such as ResultsPlus. Pearson Edexcel exam marking processes have been proven to produce the most reliable results. This demonstrates that our qualifications maintain the highest standards and can be relied upon to deliver to expectation.

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

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

Published resources

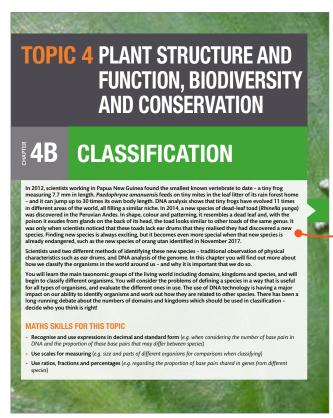
These are brand new resources to support the updated Pearson Edexcel International Advanced Levels (IALs) in Biology, Chemistry and Physics, for first teaching from September 2018.

Student Books

- Provides comprehensive coverage of the specification content.
- Each Student Book includes 3-year access to an online ActiveBook.
- Student Books feature Checkpoint questions, *Thinking Bigger* spreads and Practical Skills boxes to support understanding and key concepts.
- Exam practice provided at the end of each chapter, and sample exam answers in the back of the book.
- Subject vocabulary is collated in a glossary at the back of the books for easy reference.

Online Teacher Resource Packs

- Comprehensive teaching plans for every section of the book.
- Practice assessments and accompanying mark schemes for every chapter follow exam format.
- Student book answers to the Checkpoint and Exam Practice questions.
- Practicals support for core practicals includes student worksheets, exam style questions and teacher and technician notes.
- Guide to Thinking Bigger.



An introduction to the chapter to help students think about the concepts they will be introduced to.



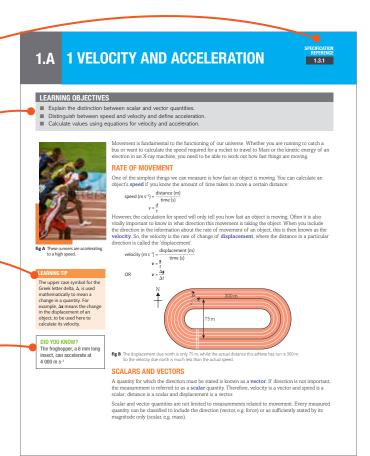
Sample page from Pearson Edexcel International AS/A Level Biology Student Book 1

The **specification reference** is given at the start of each section as well as references to any core practicals. The course provides full coverage of specification requirements.

Learning Objectives at the beginning of each section/chapter highlight what students need to know and understand, and refer to the specification requirements.

Learning tips help learners to focus their learning and avoid common errors. **Exam hints** draw learners' attention to potential pitfalls in the exam and give practical hints about preparing for the exams, answering questions in the correct format, and checking work.

Did You Know boxes in the science books feature interesting facts to help students remember the key concepts.



Sample page from Pearson Edexcel International AS/A Level Physics Student Book 1

BIOLOGY	
Pearson Edexcel International AS/A Level Biology Student Book and ActiveBook 1	978 1 292244 84 6
Pearson Edexcel International AS/A Level Biology Student Book and ActiveBook 2	978 1 292244 70 9
Pearson Edexcel International AS/A Level Biology Lab book	978 1 292244 69 3
Pearson Edexcel International AS/A Level Biology Teacher Resource Pack (ALDS) 1	978 1 292244 88 4
Pearson Edexcel International AS/A Level Biology Teacher Resource Pack (ALDS) 2	978 1 292244 73 0

CHEMISTRY	
Pearson Edexcel International AS/A Level Chemistry Student Book and ActiveBook 1	978 1 292244 86 0
Pearson Edexcel International AS/A Level Chemistry Student Book and ActiveBook 2	978 1 292244 72 3
Pearson Edexcel International AS/A Level Chemistry Lab book	978 1 292244 71 6
Pearson Edexcel International AS/A Level Chemistry Teacher Resource Pack (ALDS) 1	978 1 292244 89 1
Pearson Edexcel International AS/A Level Chemistry Teacher Resource Pack (ALDS) 2	978 1 292244 74 7

PHYSICS	
Pearson Edexcel International AS/A Level Physics Student Book and ActiveBook 1	978 1 292244 87 7
Pearson Edexcel International AS/A Level Physics Student Book and ActiveBook 2	978 1 292244 77 8
Pearson Edexcel International AS/A Level Physics Lab book	978 1 292244 75 4
Pearson Edexcel International AS/A Level Physics Teacher Resource Pack (ALDS) 1	978 1 292244 91 4
Pearson Edexcel International AS/A Level Physics Teacher Resource Pack (ALDS) 2	978 1 292244 80 8

Student Books are all accompanied by a Lab

Book, which include instructions and writing frames for the Core Practicals, as well as practical skills practice questions and answers.





I like the modular nature of IAL, the fact that I can choose whichever core units I want to do, whichever applied units I want to do. It's very comprehensive. It opens up many doors to many international universities.

Wang, Pearson Edexcel International Advanced Level student from Sri Lanka, studying Chemistry, Biology, Physics, and Mathematics.

About Pearson Edexcel

At the core of everything we do at Pearson is the desire to make a measurable impact on improving people's lives through learning. From primary school to secondary school, through to professional certification; our qualifications help educate millions of people worldwide.

Foundations for success

Pearson Edexcel International Advanced Level (IAL) is part of the iProgress family for ages 5 to 19, which also includes iPrimary, iLowerSecondary and International GCSE (IG). We offer more than just a qualification, with professional development training that keeps teachers up-to-date with the latest educational practices, support materials that make planning and teaching lessons easier, and student textbooks and online resources, so you'll have more time to focus on the development of your students' progress.

Progress to university

Developed by education specialists specifically for international learners, Pearson Edexcel IAL qualifications are recognised by leading universities across the world, including Oxford, Cambridge, Columbia, Yale, MIT, Caltech, Hong Kong / China University of Science and Technology and the National University of Singapore.



Find out more

To find out more about our Pearson Edexcel International A Level qualifications and to sign up to our monthly newsletter, visit our website, **qualifications.pearson.com/IAL**

