



Science

from Pearson



Your
options at
KS4 and
KS5



An introduction

We're passionate about science, and we want to give your Key Stage 4 and Key Stage 5 students the best opportunity to explore their own interests – whatever their learning style.

Our broad range of science qualifications allows you to **choose the course and progression route that's right for your students' personal strengths and ambitions** – making sure every individual learner has the chance to reach their full potential.

We know it can be difficult deciding on the right path, so we're here to help. This handy guide will give you all the information you need, so you can take the first step towards teaching a rewarding and engaging science qualification.

In this guide you'll find:

Key Stage 4

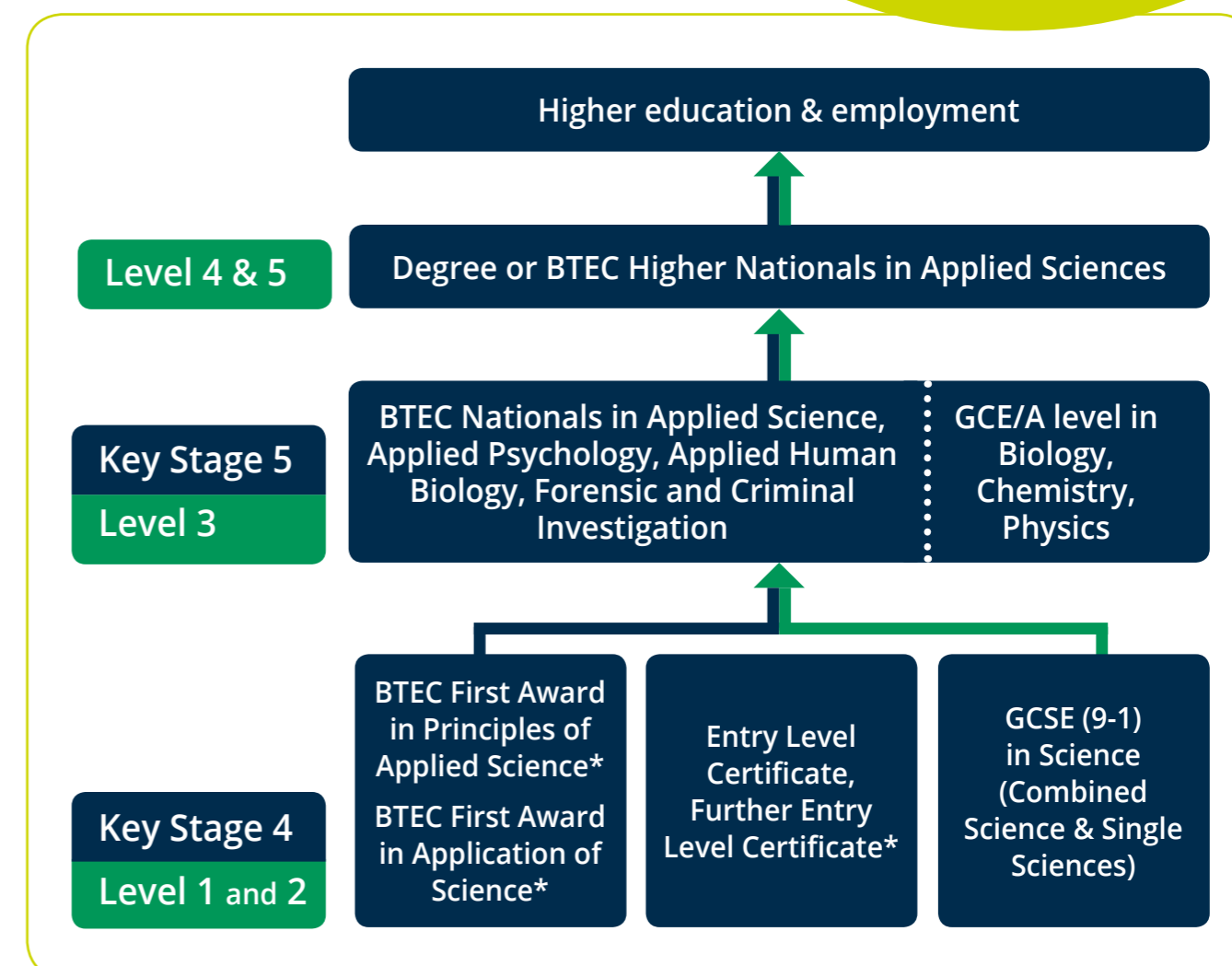
BTEC First Award in Principles of Applied Science (2012)*	5	BTEC Nationals in Applied Human Biology (2016)	10
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Key Stage 5

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Progression routes through science

There are a variety of pathways for your students to choose on their route from early secondary education to further study or employment. And we're here to support you, whichever route you take.



*Note: The BTEC First Awards and ELCs are not available on performance tables.



The qualifications in more detail

We've created an overview of each of our available Key Stage 4 and Key Stage 5 Science qualifications to help you determine which suits you and your students best.

An option for everyone

Our **BTEC** qualifications can be taught alongside academic qualifications such as GCSEs and A levels, giving your students a glimpse into a professional sector whilst teaching them transferable skills for life. Our **GCSE** and **A level** courses are designed to build key scientific skills, and incorporate lots of practical content to help you engage and develop your students' knowledge in each scientific subject area - be that Biology, Chemistry or Physics or a combination of all three.

Each qualification has a distinct **assessment style**, designed to be as accessible and inclusive as possible so every student has the chance to enjoy science and succeed in their studies. The Pearson Edexcel GCSE and A level Science qualifications are assessed at the end of 2 years, whereas there's continuous assessment within our BTEC courses.

Each of these qualifications is designed for 14+ year olds.

Please note that the BTEC First Awards and the Edexcel Entry Level Certificates are not recognised by the DfE for performance tables.

“ *The advice I would have from my personal experience is to focus on what you're passionate about... As long as you enjoy a course or a topic, you'll be able to excel at it.* **”**

Maryam Taher

Former BTEC student who went on to study Biomedical Sciences at York University.

BTEC First Award in Principles of Applied Science* BTEC First Award in Application of Science*

[Discover more](#)



Content focus:

- Designed to reflect the broad spectrum of science learning.
- The straightforward structure takes into account the unique nature of Applied Science, spanning three disciplines (physics, chemistry and biology), rather than just one.

*This qualification is not recognised by the DfE for performance tables.

Student profile:

- The Principles of Applied Science Award covers the key scientific principles vital for both scientists and citizens of the future. It develops and exemplifies these principles in applied and vocational contexts, leading to an understanding of how the principles are applied in practice.
- The Application of Science Award is suitable for students who have covered the Key Stage 4 Programme of Study. It develops students' understanding of key applications of science, and builds the skills required both for the scientific workplace and for further study.

Course structure

Unit	Assessment	Unit Size (GLH)
Principles of Applied Science First Award – Mandatory Units		
Principles of Science	External assessment	30
Chemistry and our Earth	Internal assessment	30
Energy and our Universe	Internal assessment	30
Biology and our Environment	Internal assessment	30
Application of Science First Award – Mandatory Units		
Applications of Chemical Substances	Internal assessment	30
Applications of Physical Science	Internal assessment	30
Health Applications of Life Science	Internal assessment	30
Scientific Skills	External assessment	30

Pearson Edexcel Entry Level Certificates (ELCs)*

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Content focus:

- Designed to be **co-taught with GCSE Combined Science**, with the same topic structure, content and assessment layout for both qualifications.
- Use the ELC written tests whenever you finish teaching a section of content, and use these to track how your students are progressing through the course. You can then decide whether to enter them for GCSE, ELC or both.

Student Profile:

- Ideal for **lower-attaining students** who are struggling to access the Foundation Tier Combined Science.
- Designed to support engagement, literacy and recall and boost confidence, our ELCs can provide a great stepping stone to GCSE success.



Hear how Star Academies have used our ELCs as a stepping stone to GCSE.

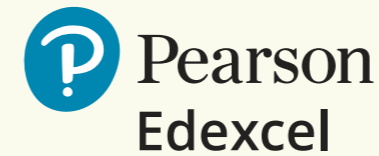


Course structure

Unit	Internal assessment	Marks
Entry Level Certificate in Science		
Biology 1A: Cells, genetics, inheritance and modification	No set time limit	25 marks
Biology 1B: Health, disease and the development of medicines	No set time limit	25 marks
Chemistry 1A: Atoms, compounds and states of matter	No set time limit	25 marks
Chemistry 1B: Separating mixtures, breaking down substances	No set time limit	25 marks
Physics 1A: Forces, movement and energy	No set time limit	25 marks
Physics 1B: Waves and radiation	No set time limit	25 marks
Entry Level Certificate in Further Science		
Biology 2A: Plants and ecosystems	No set time limit	25 marks
Biology 2B: Human biology	No set time limit	25 marks
Chemistry 2A: Chemical reactions: patterns, energy and rates of reaction	No set time limit	25 marks
Chemistry 2B: Chemistry in our world: fuels and the earth's atmosphere	No set time limit	25 marks
Physics 2A: Electricity and magnets	No set time limit	25 marks
Physics 2B: Energy and particles	No set time limit	25 marks

*This qualification is not recognised by the DfE for performance tables.

Pearson Edexcel GCSE (9-1) Sciences

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Content focus:

- A choice of **four GCSE specifications** available at foundation and higher tier, enabling you to structure the courses to best support and stretch your students together.
- GCSE Combined Science is a double award worth 2 GCSEs or students can study three stand alone GCSEs in Biology, Chemistry and Physics.
- The assessments for each include multiple choice questions, scaffolded and short answer questions, calculations, and extended open response questions.



Learn more about one Academy's experience of teaching Pearson Edexcel GCSE Science



Student profile:

- Students who take Combined Science will **study all three sciences** and they'll cover roughly two-thirds of the content of the single GCSEs in biology, chemistry and physics.
- Suited to students who are interested in progressing to higher qualifications such as the Pearson Edexcel A levels in science, or vocationally focused qualifications, such as BTEC Nationals, or considering a career in the wide selection of science industries.

See also our GCSE (9-1) in Astronomy



See also our GCSE (9-1) in Psychology



Course structure

Unit	External assessment	% of course
GCSE Combined Science	6 exam papers 70 minutes per exam paper	Each of the six exam papers is worth 16.67% (60 marks)
GCSE Biology	2 exam papers 105 minutes per exam paper	Each of the two exam papers is worth 50% (100 marks)
GCSE Chemistry	2 exam papers 105 minutes per exam paper	Each of the two exam papers is worth 50% (100 marks)
GCSE Physics	2 exam papers 105 minutes per exam paper	Each of the two exam papers is worth 50% (100 marks)

BTEC Nationals in Applied Science (2016)

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Content focus:

- Available to be taught in sizes from Certificate (180 GLH) to Extended Diploma (1080 GLH).
- Covers a broad selection of units including the principles and applications of science, investigation skills, and various optional units for students to either focus on one aspect of science or gain a broad understanding across physics, chemistry, and biology.

Student profile:

- Students will develop skills including how to plan investigations, collecting, analysing, and presenting data and communicating results.
- The Certificate and Extended Certificate can be taken as part of a diverse programme, leaving progression options fully open.
- The qualifications can also give context to subjects which would benefit from some scientific background.

Units

Mandatory Units	Assessment	Unit size (GLH)	Qualification size
1. Principles and Applications of Science	External assessment	90	All sizes
2. Practical Scientific Procedures and Techniques	Internal assessment	90	All sizes
3. Science Investigation Skills	External assessment	120	Extended Certificate, Foundation Diploma, Diploma, Extended Diploma
4. Laboratory Techniques and their Application	Internal assessment	90	Foundation Diploma, Diploma, Extended Diploma
5. Principles and Applications of Science II	External assessment	120	Diploma, Extended Diploma
6. Investigative Project	Internal assessment	90	Diploma, Extended Diploma
7. Contemporary Issues in Science	External assessment	120	Extended Diploma

A wide range of internally-assessed optional units is also available. Students choose between one and six optional units, depending on the qualification size they select.

BTEC Nationals in Applied Human Biology

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Content focus:

- Available to be taught in Certificate* (180 GLH) and Extended Certificate (360 GLH) sizes.
- The BTEC Level 3 Nationals in Applied Human Biology can help your students continue their scientific education and pursue a career in health sciences.
- Can be taught alongside sport or health and social care qualifications to aid progression to careers in sport and health-care as well as sectors allied to medicine and health.

Student Profile:

- A solid foundation for progression into health and health science sectors.
- Example career options include medicine, occupational therapy, allied health and sciences including life sciences, clinical biomedical sciences, physiological sciences and much more.
- Opportunity to work in a range of settings including hospitals, private clinics, industry, research institutes and community healthcare.

*This qualification size is not currently recognised by the DfE for performance tables.

**Students chose one optional unit in the Extended Certificate

Course structure

Mandatory Units	Assessment	Unit size (GLH)	Mandatory or optional
1. Principles of Applied Human Biology	External assessment	90	Mandatory (Certificate and Extended Certificate)
2. Practical Microbiology and Infectious Diseases	Internal assessment	90	Mandatory (Certificate and Extended Certificate)
3. Human Biology and Health Issues	External assessment	120	Mandatory (Extended Certificate)
4. Functional Physiology	Internal assessment	60	Optional (Extended Certificate)
5. Diseases, Disorders, Treatments and Therapies	Internal assessment	60	Optional (Extended Certificate)
6. Genetics and Genetic Engineering	Internal assessment	60	Optional (Extended Certificate)
7. Biomedical Science	Internal assessment	60	Optional (Extended Certificate)
8. Human Reproduction and Fertility	Internal assessment	60	Optional (Extended Certificate)



BTEC Nationals in Applied Psychology


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Content focus:

- Available to be taught in Certificate (180 GLH) and Extended Certificate (360 GLH) sizes.
- The BTEC Level 3 Nationals in Applied Psychology cover the key approaches to psychology – cognitive, social, learning, and biological.
- Can be taught alongside sport or health and social care qualifications to aid progression to careers in sport and health-care sectors.
- Content covers psychological approaches and applications, research, health psychology and optional units.

Student profile:

- The ideal stepping stone to further study or entry level employment in psychology and psychology-related fields.
- A practical focus on the application of psychology gives learners an insight into areas such as treating mental health issues, improving sporting performance, understanding how children develop and offender treatment.
- Example career options include clinical, counselling, forensic, sport and exercise psychologist as well as mental health worker, and many more.

Course structure

Unit	Assessment	Unit size (GLH)	Mandatory or optional
1. Psychological Approaches and Applications	External assessment	90	Mandatory (Certificate and Extended Certificate)
2. Conducting Psychological Research	Internal assessment	90	Mandatory (Certificate and Extended Certificate)
3. Health Psychology	External assessment	120	Mandatory (Extended Certificate)
4. Criminal and Forensic Psychology	Internal assessment	60	Optional (Extended Certificate)
5. Promoting Children's Psychology Development	Internal assessment	60	Optional (Extended Certificate)
6. Introduction to Psychopathology	Internal assessment	60	Optional (Extended Certificate)
7. Applied Sport Psychology	Internal assessment	60	Optional (Extended Certificate)

BTEC Nationals in Forensic and Criminal Investigation


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Content focus:

- Available to be taught in Foundation Diploma (510 GLH), Diploma (720 GLH), and Extended Diploma (1080 GLH) sizes.
- Foundation Diploma can be taught as a 1 year full-time course of study or part-time 2 year course that can be taken alongside other qualifications. The Diploma is designed to be the substantive part of a 16-19 study program.
- Flexible content for your students to progress to larger-size qualifications or specialise.
- A range of **optional units** is available. Students can take two in the Foundational Diploma and Diploma, and 6 in the Extended Diploma.

Student Profile:

- Can be taught alongside BTEC Nationals in Applied Science – several units are shared.
- Students will learn how to understand how criminals think, how crime scenes are investigated and the procedures followed.
- Following key science units, including practical scientific procedures and techniques, students will cover topics such as environmental forensics, forensic fire investigation, applications of criminology, and applications of criminal and forensic psychology.

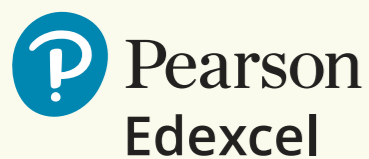
Mandatory Units

Unit	Assessment	Unit size (GLH)	Qualification size
1. Principles and Applications of Science I*	External assessment	90	All sizes
2. Practical Scientific Procedures and Techniques*	Internal assessment	90	All sizes
3. Science Investigation Skills*	External assessment	120	All sizes
4. Forensic Investigation Procedures in Practice	Internal assessment	90	All sizes

*Units 1-3 are shared with the BTEC National in Applied Science.



Pearson Edexcel AS/A level Biology A (Salters-Nuffield) and AS/A level Biology B



Content focus:

- We offer **two different AS/A level Biology qualifications** so you can choose the course that will work best for you and your students.
- Both Biology A (Salters-Nuffield) and Biology B cover the core subject criteria and are an excellent basis for progression to further study, but they differ in topic matter and teaching styles.

Biology A (Salters-Nuffield)

- Uses storylines and real-life contexts to introduce biological principles.
- Topics covered alongside the core subject criteria include developmental biology, the musculoskeletal system, and learning and habituation.

Discover more



Student profile:

- Students can choose to take AS and A level exams to receive grades for both qualifications, or just A level papers at the end of Year 13 to gain an A level grade.
- We've worked with Higher Education institutions to ensure that our qualifications provide the right preparation for further study of biology or a related subject at university.

Biology B

- Built around a combination of traditional and modern topics.
- Topics covered alongside the core subject criteria include microbiology; there's also a focus on physiology, such as osmoregulation and the kidney.

Discover more



See also our
AS/A level Psychology



Course structures

AS Biology A (Salters-Nuffield)

Component	External assessment	% of course
Lifestyle, Transport, Genes and Health	Paper 1	80 marks, 90 minutes, 50%
Development, Plants and the Environment	Paper 2	80 marks, 90 minutes, 50%

A level Biology A (Salters-Nuffield)

Component	External assessment	% of course
The Natural Environment and Species Survival	Paper 1	100 marks, 120 minutes, 33.3%
Energy, Exercise and Co-ordination	Paper 2	100 marks, 120 minutes, 33.3%
General and Practical Applications in Biology	Paper 3	100 marks, 120 minutes, 33.3%

AS Biology B

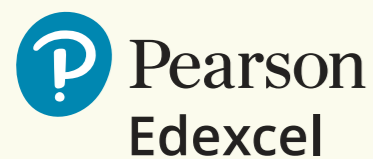
Component	External assessment	% of course
Core Cellular Biology and Microbiology	Paper 1	80 marks, 90 minutes, 50%
Core Physiology and Ecology	Paper 2	80 marks, 90 minutes, 50%

A level Biology B

Component	External assessment	% of course
Advanced Biochemistry, Microbiology and Genetics	Paper 1	90 marks, 105 minutes, 30%
Advanced Physiology, Evolution and Ecology	Paper 2	90 marks, 105 minutes, 30%
General and Practical Principles in Biology	Paper 3	120 marks, 150 minutes, 40%



Pearson Edexcel AS/A level Chemistry

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Content focus:

- Specification content is arranged into distinct topics that not only cover physical, organic and inorganic chemistry and fundamental subject elements, but also build on each other to give students a broad knowledge base for assessment, and for progression to further study and the workplace.
- Paper 1 and Paper 2 assess one half of the learning outcomes; Paper 3 assesses practical skills, along with knowledge across the specification.

Student profile:

- Students can choose to take AS and A level exams to receive grades for both qualifications, or just A level papers at the end of Year 13 to gain an A level grade.
- We've worked with Higher Education institutions to ensure that our qualifications provide the right preparation for further study of chemistry or a related subject at university.

Course structure

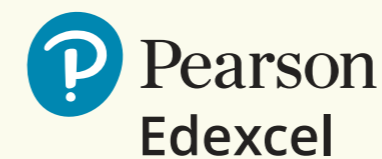
AS Chemistry

Component	External assessment	% of course
Core Inorganic and Physical Chemistry	Paper 1	80 marks, 90 minutes, 50%
Core Organic and Physical Chemistry	Paper 2	80 marks, 90 minutes, 50%

A level Chemistry

Component	External assessment	% of course
Advanced Inorganic and Physical Chemistry	Paper 1	90 marks, 105 minutes, 30%
Advanced Organic and Physical Chemistry	Paper 2	90 marks, 105 minutes, 30%
General and Practical Principles in Chemistry	Paper 3	120 marks, 150 minutes, 40%

Pearson Edexcel AS/A level Physics

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Content focus:

- Specification content is arranged into distinct topics that not only cover fundamental areas of physics, such as forces, waves and electricity, but also build on each other to give students a broad knowledge base for assessment, and for progression to further study and the workplace.
- Teachers can take a context-based route through the specification (instead of a concept-led approach), using the Salters-Horners approach and the resources specific to this approach.

- Paper 1 and Paper 2 assess one half of the learning outcomes; Paper 3 assesses practical skills, along with knowledge across the specification.

Student Profile:

- Students can choose to take AS/A level exams to receive grades for both qualifications, or just A level papers at the end of Year 13 to gain an A level grade.
- We've worked with Higher Education institutions to ensure that our qualifications provide the right preparation for further study of physics or a related subject at university.

Course structure

AS Physics

Component	External assessment	% of course
Core Physics I	Paper 1	80 marks, 90 minutes, 50%
Core Physics II	Paper 2	80 marks, 90 minutes, 50%

A level Physics

Component	External assessment	% of course
Advanced Physics I	Paper 1	90 marks, 105 minutes, 30%
Advanced Physics II	Paper 2	90 marks, 105 minutes, 30%
General and Practical Principles in Physics	Paper 3	120 marks, 150 minutes, 40%



Why science matters

Discover more

Science is relevant to everything we see and do in the world around us. We're here to help you nurture that curiosity, as we work together to provide engaging and practical ways for learners to explore science throughout their education and into all aspects of life.

“ I think if I could communicate anything to my students through my science teaching it would be the sense of awe and wonder that science gives me, so the size of the universe and things like the application of the scientific method to technologies and medicines that change people's lives and save people's lives as well. ”

Andrew Wraith
Director of Science
Laisterdyke Leadership Academy



Watch our video: **Why science matters**



We believe that science education should be available and **accessible to all** students. Our choice of learning pathways and support are carefully designed to help build confidence and personal success.

“ As our students became more successful with the ELC assessments they became less anxious and more inclined to attempt questions in the GCSE and therefore gained more marks which then compounded the success. ”

Philippa Beech
Head of Key Stage 4 Science
The Co-op Academy



Read our case study: **ELCs – a stepping stone to GCSE Success.**



“ I would definitely recommend BTEC to someone who's interested in a certain course or a topic. It provides the perfect combination of hands-on experience and also academic work. ”

Maryam Taher
Former BTEC student who went on to study Biomedical Sciences at York University.



Watch our video: **I choose BTEC**



“ Careers within science are quite difficult to access in some cases. So I feel like one of the things that industry could be doing is looking at building relationships with schools, trying to get students' experiences outside and being able to show application of what they learn in school in the real world. I think if we can do that then students will naturally want to develop their understanding of science, and therefore we'll have better skilled people for the future. ”

Aadil Laher
Director of Science
Tong Leadership Academy



Watch our video: **Education and industry working together to encourage the take up of STEM subjects**





Unbeatable support

Free support materials



Our website has a variety of free support materials for each qualification, from specifications, to sample assessment materials, course planners and first-look guides.

Irine Muhiuddin, your dedicated subject advisor, is on hand to help across our range of science qualifications, providing support and guidance with whatever course choices you make.



Keep up to date

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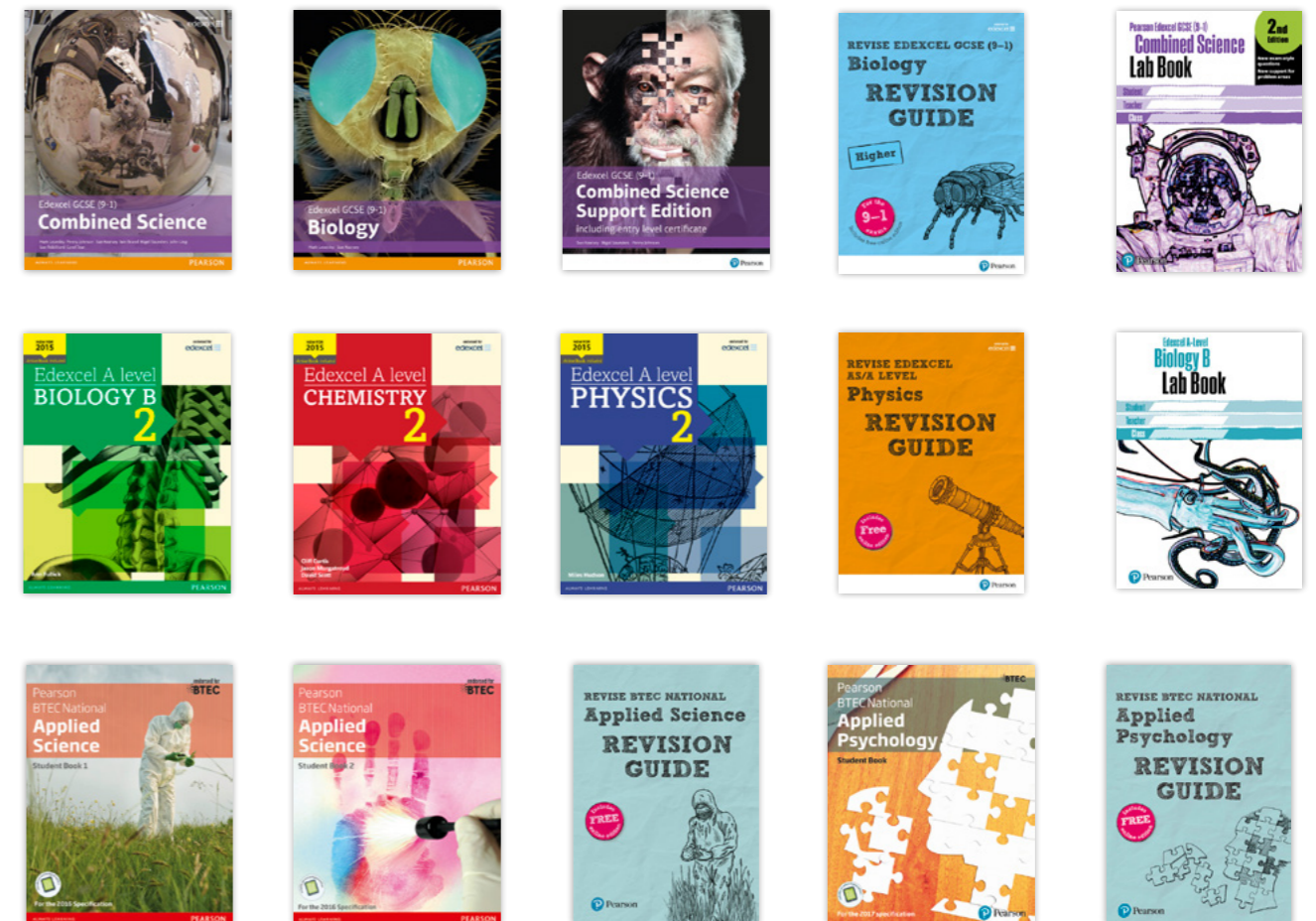
“We were really impressed with the resources that Pearson had to offer for us and the support materials that were in place... We know that the materials that students are getting in front of them are top quality... The support has been really amazing.”

Nicky Crum
Science Improvement Lead
Star Academies

Resources to support you



There's also a host of **published resources*** for teaching, learning and revision across all the GCSE, AS/A level and BTEC qualifications.* You can tailor your use of the available materials, keeping you and your learners' needs at the heart of what you do.



*You don't have to purchase resources to teach any of our qualifications.





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