Pearson Edexcel

# International GCSE

## Biology (9–1)

## Getting Started Guide

Pearson Edexcel International GCSE in Biology (4BI1)

First teaching September 2017

First examination June 2019

Issue 2

# Biology (2017) (4BI1)
## Getting Started Guide

# Contents

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*Through initiatives such as onscreen marking and administration, Pearson is leading the way in using technology to modernise educational assessment, and to support teachers and learners.*
*This guide is Issue 2. We will inform centres of any changes to this issue. The latest issue can be found on the Pearson Edexcel website:*
*https://qualifications.pearson.com/*

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# Biology (2017) (4BI1)
## Getting Started Guide

# Introduction

This Getting Started Guide provides an overview of our International GCSE Biology (2017) qualification, to help you get to grips with the changes to content and assessment, and to help you understand what these mean for you and your learners.

Our package of support to help you plan and implement the specification includes:

### Planning

We will provide a course planner and an editable scheme of work that you can adapt to suit your department. We also provide training for international and UK-based schools.

### Teaching and learning

To support you in delivering this new specification, we will provide suggested resource lists and suggested activities.

### Understanding the standard

Sample Assessment Materials and Extra Assessment Materials will be provided.

### Tracking learner progress

ResultsPlus provides the most detailed analysis available of your students' examination performance. It can help you identify topics and skills where students could benefit from further learning. We will also offer examWizard, which is a free exam preparation tool containing a bank of past Edexcel exam questions, mark schemes and examiners' reports for a range of GCSE and GCE subjects.

### Support

Our subject advisor ensures that you receive help and guidance from us. You can sign up to receive updates at https://qualifications.pearson.com/en/forms/subject-advisor-updates-for-teachers-andtutors.html or contact us using the support portal https://support.pearson.com/uk/s/qualificationcontactus.

# Key features of the qualification

**Why choose Pearson Edexcel International GCSE in Biology (2017)?**

We have listened to feedback from all parts of the international school, UK independent school and language teaching community including a large number of teachers. We have made changes that will engage students and give them skills that will support progression to further study in biology and a range of other subjects, in biological sciences and elsewhere. Our content and assessment approach has been designed to meet students' needs and be consistent with our approach across the sciences.

## Key qualification features

At Pearson, we offer separate science linear (2017) and modular qualifications in Biology, Chemistry and Physics, as well as Double Award Science qualification – these have been designed to meet different learners' needs. The content and assessment approach for this qualification has been designed to maintain the rigorous standards of all Pearson Edexcel qualifications and meet learner needs in the following ways:

- Content that is interesting and engaging for learners but is also designed to ensure good preparation, both for those continuing to further study and for those wishing to work in a biology-related field.
- There are opportunities to 'localise' the content to make it more relevant for learners in their own country.

## Assessment structure

- The Pearson Edexcel International GCSE in Biology (2017) is a linear qualification. Two untiered written examinations must be taken in the same series at the end of the course of study. The assessment model has two papers. Paper 1 is 2 hours long and assesses core (non-bold) content from across the specification. Paper 2 is 1 hour and 15 minutes long and assesses a range of sub-topics (bold content) in greater detail in addition to the core content. Both papers will have a range of question styles and calculators can be used in both papers. Practical skills will be assessed through the written papers; there is no coursework or practical exam.

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## Clear and straightforward question papers

- Our question papers are clear and accessible for all learners of all ability ranges and learning styles. Our mark schemes are straightforward, so that the assessment requirements are clear.

## Broad and deep development of learners' skills

- The design of the international GCSEs aims to extend learners' knowledge and understanding by broadening and deepening skills, for example learners develop the ability to:
  - focus on practical skills through a number of practicals listed in the specification content. These can be supplemented with other suggested practicals. The skills developed will be assessed through questions in written examinations.
  - improve learners' analytical and logic skills by applying understanding of scientific concepts and principles to a range of situations. This will include some examination questions that are more problem solving in style.
  - address the need for mathematical skills to complement learners' biology skills by covering a range of mathematical areas.

## Progression

International GCSE qualifications enable successful progression to A Level and beyond. Through our 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.

## Courses to suit your learners' needs and interests

Teachers of biology have a choice of International GCSE courses to deliver, each giving different levels of depth to meet learners' needs. As well as the Pearson Edexcel International GCSE in Biology (2017), learners can also be taught our International GCSE in Biology (Modular), International GCSE in Science (Double Award) (2017) and International GCSE in Science (Double Award) (Modular). The Science (Double Award) course offers a reduced amount of content but is assessed to the same standard. Progression routes for this course may vary slightly from those for the Pearson Edexcel International GCSE in Biology.

More information about all our qualifications can be found on our Edexcel International GCSE pages at qualifications.pearson.com

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# Qualification overview

| **Biology Paper 1** | *Paper code 4BI1/1B and 4SD0/1B |
|---|---|
| • Externally assessed<br>• Availability: November and June<br>• First assessment: June 2019 | 61.1% of the total International GCSE |
| **Content summary**<br>Assesses core content that is **not** in bold and does not have a 'B' reference. Questions may come from any topic area across the specification.<br>1 The nature and variety of living organisms<br>2 Structures and functions in living organisms<br>3 Reproduction and inheritance<br>4 Ecology and the environment<br>5 Use of biological resources | |
| **Assessment**<br>• The paper is assessed through a 2-hour written examination paper set and marked by Pearson.<br>• The total number of marks is 110.<br>• A mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.<br>• A calculator may be used in the examinations. | |

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| **Biology Paper 2** | *Paper code 4BI1/2B |
|---|---|
| • Externally assessed<br>• Availability: November and June<br>• First assessment: June 2019 | 38.9% of the total International GCSE |

**Content summary**

Assesses **all the content**, including content that is in bold and has a 'B' reference.
Questions may come from any topic area across the specification.
Bold statements cover some sub-topics in greater depth.

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

**Assessment**

- The paper is assessed through a 1-hour and 15-minute written examination paper set and marked by Pearson.
- The total number of marks is 70.
- 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.

## Content overview

The specification content is divided into the topics, to provide centres with a clear view of what is required. Each topic is then divided into a number of key ideas (sub-topics) that give a focus to the content. Each key idea is broken down into detailed content that specifies what must be studied. The word 'including' in the content specifies the detail of what must be covered. Examination questions will be based on this content.

# Biology (2017) (4BI1)
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## Qualification aims

The aims of this qualification are to enable learners to:

- learn about unifying patterns and themes in biology and use them in new and changing situations
- acquire knowledge and understanding of biological facts, terminology, concepts, principles and practical techniques
- apply the principles and concepts of biology, including those related to the applications of biology, to different contexts
- evaluate biological information, making judgements on the basis of this information
- appreciate the practical nature of biology, developing experimental and investigative skills based on correct and safe laboratory techniques
- analyse, interpret and evaluate data and experimental methods, drawing conclusions that are consistent with evidence from experimental activities and suggesting possible improvements and further investigations
- recognise the importance of accurate experimental work and reporting scientific methods in biology
- select, organise and present relevant information clearly and logically using appropriate vocabulary, definitions and conventions
- develop a logical approach to problem solving in a wider context
- select and apply appropriate areas of mathematics relevant to biology as set out under each topic
- prepare for more advanced courses in biology and for other courses that require knowledge of biology.

## Experimental skills

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

The skills developed through these and other practicals will be assessed through written examinations. In the assessment of experimental skills, learners may be tested on their ability to:

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

- make observations and measurements with appropriate precision, record these methodically and present them in appropriate ways
- identify independent, dependent and control variables
- use scientific knowledge and understanding to analyse and interpret data to draw conclusions from experimental activities that are consistent with the evidence
- communicate the findings from experimental activities, using appropriate technical language, relevant calculations and graphs
- assess the reliability of an experimental activity
- evaluate data and methods taking into account factors that affect accuracy and validity.

Our practical investigations are embedded within the Biology content as specification points in italics, and are summarized below:

| Core | Separate |
|---|---|
| *2.9 practical: investigate food samples for the presence of glucose, starch, protein and fat*<br><br>*2.12 practical: investigate how enzyme activity can be affected by changes in temperature*<br><br>*2.17 practical: investigate diffusion and osmosis using living and non-living systems*<br><br>*2.23 practical: investigate photosynthesis, showing the evolution of oxygen from a water plant, the production of starch and the requirements of light, carbon dioxide and chlorophyll*<br><br>*2.39 practical: investigate the evolution of carbon dioxide and heat from respiring seeds or other suitable living organisms*<br><br>*2.50 practical: investigate breathing in humans, including the release of carbon dioxide and the effect of exercise*<br><br>*3.5 practical: investigate the conditions needed for seed germination* | *2.14B practical: investigate how enzyme activity can be affected by changes in pH*<br><br>*2.33B practical: investigate the energy content in a food sample*<br><br>*2.45B practical: investigate the effect of light on net gas exchange from a leaf, using hydrogen-carbonate indicator*<br><br>*2.58B practical: investigate the role of environmental factors in determining the rate of transpiration from a leafy shoot*<br><br>*4.4B practical: investigate the distribution of organisms in their habitats and measure biodiversity using quadrats* |

| | |
|---|---|
| *4.2 practical: investigate the population size of an organism in two different areas using quadrats*<br><br>*5.6 practical: investigate the role of anaerobic respiration by yeast in different conditions* | |

## Suggested practical investigations

The following suggestions are additional practical investigations that exemplify the scientific process. They can be used to supplement learners' understanding of biology in addition to the practical investigations found within the main body of the content.

- Investigate human responses to external stimuli.
- Investigate reaction times.
- Investigate the effect of pollutants on plant germination and plant growth.
- Investigate inheritance using suitable organisms or models.
- Investigate the speed of transmission of electrical impulses in the nervous system.
- Investigate the presence of glucose in simulated urine/body fluids.
- Investigate the effect of light and/or gravity on plant growth.
- Investigate the effect of exercise on heart rate.
- Investigate the relationship between organisms and their environment using fieldwork techniques.
- Investigate the distribution of organisms in an ecosystem, using sampling techniques including:
  - pooters
  - sweep nets/pond nets
  - pitfall traps and measure environmental factors including:
    - temperature
    - light intensity
    - pH.
- Investigate plant and animal cells with a light microscope.
- Investigate the effect of glucose concentration on rate of anaerobic respiration in yeast.
- Investigate how the structure of the leaf is adapted for photosynthesis.
- Investigate the effect of different factors on yoghurt making.
- Investigate the use of enzymes in washing powders.
- Investigate temperature loss in beakers of hot water of different sizes.

Safety is an overriding requirement for all practical work. Centres are responsible for ensuring that whenever their learners complete practical work appropriate safety procedures are followed.

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### Mathematical skills

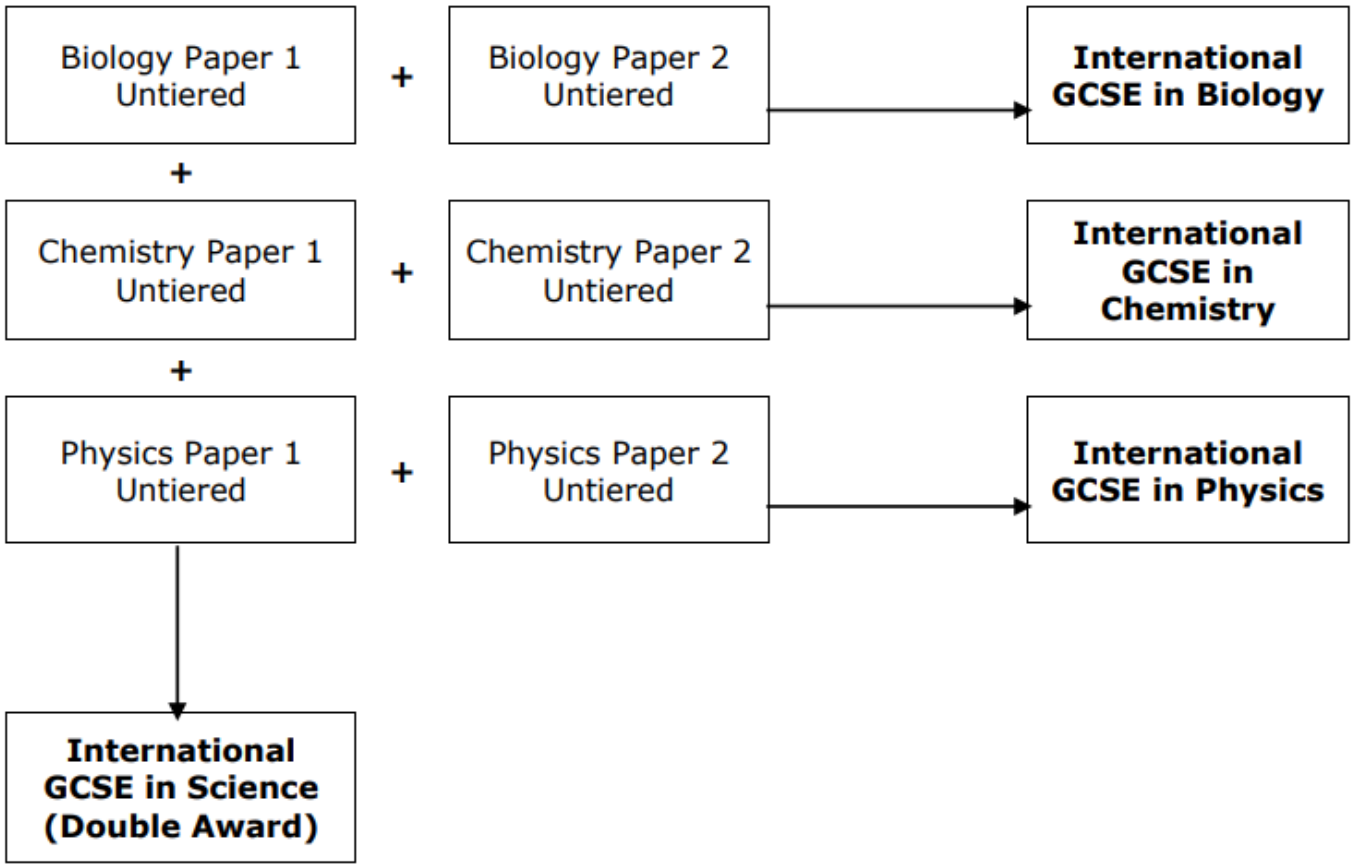
The table below identifies the mathematical skills that will be developed and assessed throughout this qualification. These are not explicitly referenced in the content. Details of the mathematical skills in other science subjects are given for reference:

| | | B | C | P |
|---|---|---|---|---|
| **1** | **Arithmetic and numerical computation** | | | |
| A | Recognise and use numbers in decimal form | ✓ | ✓ | ✓ |
| B | Recognise and use numbers in standard form | ✓ | ✓ | ✓ |
| C | Use ratios, fractions, percentages, powers and roots | ✓ | ✓ | ✓ |
| D | Make estimates of the results of simple calculations, without using a calculator | ✓ | | ✓ |
| E | Use calculators to handle sin x and sin-1 x, where x is expressed in degrees | | | ✓ |
| **2** | **Handling data** | | | |
| A | Use an appropriate number of significant figures | ✓ | ✓ | ✓ |
| B | Understand and find the arithmetic mean (average) | ✓ | ✓ | ✓ |
| C | Construct and interpret bar charts | ✓ | ✓ | ✓ |
| D | Construct and interpret frequency tables, diagrams and histograms | ✓ | | ✓ |
| E | Understand the principles of sampling as applied to scientific data | ✓ | | |
| F | Understand simple probability | ✓ | ✓ | ✓ |
| G | Understand the terms mode and median | ✓ | | |
| H | Use a scatter diagram to identify a pattern or trend between two variables | ✓ | ✓ | ✓ |
| I | Make order of magnitude calculations | ✓ | ✓ | ✓ |
| **3** | **Algebra** | | | |
| A | Understand and use the symbols <, >, ∝, ~ | | ✓ | ✓ |
| B | Change the subject of an equation | ✓ | ✓ | ✓ |
| C | Substitute numerical values into algebraic equations using appropriate units for physical quantities | ✓ | ✓ | ✓ |
| D | Solve simple algebraic equations | ✓ | ✓ | ✓ |
| **4** | **Graphs** | | | |
| A | Translate information between graphical and numerical form | ✓ | ✓ | ✓ |
| B | Understand that $y = mx + c$ represents a linear relationship | | ✓ | ✓ |
| C | Plot two variables (discrete and continuous) from experimental or other data | ✓ | ✓ | ✓ |
| D | Determine the slope and intercept of a linear graph | ✓ | ✓ | ✓ |
| E | Understand, draw and use the slope of a tangent to a curve as a measure of rate of change | | ✓ | ✓ |
| F | Understand the physical significance of area between a curve and the *x*-axis, and measure it by counting squares as appropriate | | | ✓ |

| | | B | C | P |
|---|---|---|---|---|
| **5** | **Geometry and trigonometry** | | | |
| A | Use angular measures in degrees | | | ✓ |
| B | Visualise and represent 2D and 3D objects, including two dimensional representations of 3D objects | | | ✓ |
| C | Calculate areas of triangles and rectangles, surface areas and volumes of cubes | ✓ | | ✓ |

# Assessment guidance

How assessment relates to the qualification is demonstrated below




A Pearson Edexcel International GCSE in Science (Single Award) qualification is also available. This will cover approximately 50 per cent of the Pearson Edexcel International GCSE in Science (Double Award) specification, while still having a comparable level of rigour and demand.

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### Assessment requirements

| Paper number | Level | Assessment information | Number of marks allocated in the paper |
|---|---|---|---|
| Paper 1B | 1/2 | Assessed through a 2-hour written examination set and marked by Pearson.<br><br>The paper is weighted at 61.1% of the qualification.<br><br>A mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.<br><br>Assesses the content that is **not** in bold and does not have a 'B' reference. Questions may come from any topic area across the specification. | 110 |
| Paper 2B | 1/2 | Assessed through a 1-hour and 15-minute written examination set and marked by Pearson.<br><br>The paper is weighted at 38.9% of the qualification.<br><br>A mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.<br><br>Assesses **all the content**, including content that is in bold and has a 'B' reference. Questions may come from any topic area across the specification.<br><br>Bold statements cover some sub-topics in greater depth. | 70 |

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## Assessment objectives and weightings

| | | International GCSE |
|---|---|---|
| **AO1** | Knowledge and understanding of biology | 38–42% |
| **AO2** | Application of knowledge and understanding, analysis and evaluation of biology | 38–42% |
| **AO3** | Experimental skills, analysis and evaluation of data and methods in biology | 19–21% |
| | | 100% |

## Relationship of assessment objectives to units

| **Unit number** | **Assessment objective** | | |
|---|---|---|---|
| | **AO1** | **AO2** | **AO3** |
| Biology Paper 1 | 23.2–25.7% | 23.2–25.7% | 11.6–12.8% |
| Biology Paper 2 | 14.8–16.3% | 14.8–16.3% | 7.4–8.2% |
| **Total for International GCSE** | 38–42% | 38–42% | 19–21% |

### Sample assessment materials

Sample unit assessments and mark schemes can be found in the Pearson Edexcel International GCSE Biology Sample Assessment Materials (SAMs) document.

### Calculators

Learners will be expected to have access to a suitable electronic calculator for all examination papers. Calculators that allow for the retrieval of text or formulae or QWERTY keyboards will not be allowed for use in examinations.

### Command word taxonomy

This table lists the command words that could be used in the examinations for this qualification and their definitions.

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| Command word | Definition |
|---|---|
| Add/Label | Requires the addition or labelling of a stimulus material given in the question, for example labelling a diagram or adding units to a table. |
| Calculate | Obtain a numerical answer, showing relevant working. |
| Comment on | Requires the synthesis of a number of variables from data/information to form a judgement. |
| Complete | Requires the completion of a table/diagram. |
| Deduce | Draw/reach conclusion(s) from the information provided. |
| Describe | To give an account of something. Statements in the response need to be developed, as they are often linked but **do not** need to include a justification or reason. |
| Determine | The answer must have an element that is quantitative from the stimulus provided, or must show how the answer can be reached quantitatively. To gain maximum marks, there must be a quantitative element to the answer. |
| Design | Plan or invent a procedure from existing principles/ideas. |
| Discuss | • Identify the issue/situation/problem/ argument that is being assessed within the question.<br>• Explore all aspects of an issue/situation/problem/ argument.<br>• Investigate the issue/situation etc. by reasoning or argument. |
| Draw | Produce a diagram either using a ruler or freehand. |
| Estimate | Find an approximate value, number or quantity from a diagram/given data or through a calculation. |
| Evaluate | Review information (e.g. data, methods) then bring it together to form a conclusion, drawing on evidence including strengths, weaknesses, alternative actions, relevant data or information. Come to a supported judgement of a subject's quality and relate it to its context. |
| Explain | An explanation requires a justification/exemplification of a point. The answer must contain some element of reasoning/justification – this can include mathematical explanations. |
| Give/State/Name | All of these command words are really synonyms. They generally all require recall of one or more pieces of information. |
| Give a reason/reasons | When a statement has been made and the requirement is only to give the reason(s) why. |
| Identify | Usually requires some key information to be selected from a given stimulus/resource. |
| Justify | Give evidence to support (either the statement given in the question or an earlier answer). |

| Command word | Definition |
|---|---|
| Plot | Produce a graph by marking points accurately on a grid from data that is provided and then draw a line of best fit through these points. A suitable scale and appropriately labelled axes must be included if these are not provided in the question. |
| Predict | Give an expected result. |
| Show that | Verify the statement given in the question. |
| Sketch | Produce a freehand drawing. For a graph, this would need a line and labelled axes with important features indicated.<br>The axes are not scaled. |
| State what is meant by | When the meaning of a term is expected but there are different ways for how these can be described. |
| Suggest | Use your knowledge to propose a solution to a problem in a novel context. |
| **Verb proceeding a command word** | |
| Analyse the data/graph to explain | Examine the data/graph in detail to provide an explanation. |
| **Multiple choice questions** | |
| What, Why, Which | Direct command words used for multiple-choice questions. |

# Planning

We have provided a course planner and an editable scheme of work to support you in delivering this qualification.

This section contains a 2-year course planner for the International GCSE Biology (2017) qualification. It follows the specification and scheme of work to cover each of the units.

The course planner summarises what can be covered in each term to enable completion of the content and preparation for assessment at the end of each year. It assumes that each year is split into 3 terms and that each week accounts for roughly 2 Guided Learning Hours over 60 weeks of teaching to give a total of 120 hours for the Biology (2017).

This is only a suggested course planner with suggested timings, and it does not need to be followed. You may decide to start teaching content earlier if you would like more time.

| Year | Term | Week | Topic/Sub-topic | Spec points/practicals |
|---|---|---|---|---|
| 1 | 1 | 1 | Section 1: The nature and variety of living organisms<br>a) Characteristics of living organisms<br>b) Variety of living organisms | 1.1, 1.2 |
| 1 | 1 | 2 | b) Variety of living organisms | 1.3, 1.4 |
| 1 | 1 | 3 | Consolidation<br>Assessment | |
| 1 | 1 | 4 | Feedback<br>Section 2: Structures and functions in living organisms<br>a) Levels of organisation<br>b) Cell structure | 2.1, 2.2, 2.3, 2.4 |
| 1 | 1 | 5 | b) Cell structure<br>c) Biological molecules | 2.5B, 2.6B, 2.7, 2.8 |
| 1 | 1 | 6 | c) Biological molecules | 2.9, 2.10, 2.11 |

| | | | | |
|---|---|---|---|---|
| | | | | *Practical: investigate food samples for the presence of glucose, starch, protein, and fat* |
| 1 | 1 | 7 | c) Biological molecules | 2.12, 2.13<br>*Practical: investigate how enzyme activity can be affected by changes in temperature* |
| 1 | 1 | 8 | c) Biological molecules<br>Consolidation | 2.14B<br>***Practical: investigate how enzyme activity can be affected by changes in pH*** |
| 1 | 1 | 9 | Assessment<br>Feedback | |
| 1 | 1 | 10 | d) Movement of substances into and out of cells | 2.15, 2.16 |
| 1 | 1 | 11 | d) Movement of substances into and out of cells | 2.15, 2.16, 2.17<br>*Practical: investigate osmosis using living and non-living systems* |
| 1 | 2 | 1 | d) Movement of substances into and out of cells<br>e) Nutrition | 2.15, 2.16, 2.17, 2.18, 2.19<br>*Practical: investigate osmosis using living and non-living systems* |
| 1 | 2 | 2 | e) Nutrition | 2.20, 2.21, 2.23<br>*Practical: investigate photosynthesis, showing the evolution of oxygen from a water plant, the production of starch and the requirements of light, carbon dioxide and chlorophyll* |
| 1 | 2 | 3 | e) Nutrition | 2.22, 2.23<br>*Practical: investigate photosynthesis, showing the* |

| | | | | |
|---|---|---|---|---|
| | | | | *evolution of oxygen from a water plant, the production of starch and the requirements of light, carbon dioxide and chlorophyll* |
| 1 | 2 | 4 | Consolidation Assessment | |
| 1 | 2 | 5 | Feedback<br>e) Nutrition | 2.24, 2.25, 2.26 |
| 1 | 2 | 6 | e) Nutrition | 2.27, 2.28, 2.29 |
| 1 | 2 | 7 | e) Nutrition | 2.30, 2.31, 2.32, 2.33B<br>*Practical: investigate the energy content in a food sample* |
| 1 | 2 | 8 | f) Respiration | 2.34, 2.35, 2.36, 2.37, 2.38, 2.39<br>*Practical: investigate the evolution of carbon dioxide and heat from respiring seeds or other suitable living organisms* |
| 1 | 2 | 9 | g) Gas exchange | 2.40B, 2.41B, 2.42B, 2.43B, 2.44B |
| 1 | 2 | 10 | g) Gas exchange | 2.45B, 2.46, 2.47, 2.48<br>*Practical: investigate the effect of light on net gas exchange from a leaf, using hydrogen-carbonate indicator* |
| 1 | 3 | 1 | g) Gas exchange | 2.49, 2.50<br>*Practical: investigate breathing in humans, including the release of carbon dioxide and the effect of exercise* |

| | | | | |
|---|---|---|---|---|
| 1 | 3 | 2 | Consolidation<br>Assessment | |
| 1 | 3 | 3 | Feedback<br>h) Transport | 2.51, 2.52, 2.53 |
| 1 | 3 | 4 | h) Transport | 2.54, **2.55B, 2.56B** |
| 1 | 3 | 5 | h) Transport | **2.57B, 2.58B**<br>*Practical: investigate the role of environmental factors in determining the rate of transpiration from a leafy shoot* |
| 1 | 3 | 6 | h) Transport | 2.59, 2.60, 2.61, **2.64B** |
| 1 | 3 | 7 | h) Transport | 2.62, **2.63B** |
| 1 | 3 | 8 | h) Transport | 2.65, 2.66, 2.67, 2.68, 2.69 |
| 1 | 3 | 9 | Consolidation<br>Assessment | |
| 1 | 3 | 10 | Feedback<br>i) Excretion | 2.70, 2.71, **2.72B, 2.73B** |
| 2 | 1 | 1 | i) Excretion | **2.74B, 2.75B, 2.76B, 2.77B** |
| 2 | 1 | 2 | i) Excretion<br>j) Coordination and response | **2.78B, 2.79B,** 2.80, 2.81, 2.82, 2.93 |
| 2 | 1 | 3 | j) Coordination and response | 2.83, 2.84, 2.85, 2.87, 2.88, 2.90 |
| 2 | 1 | 4 | j) Coordination and response | 2.89, 2.91, 2.92 |
| 2 | 1 | 5 | j) Coordination and response<br>Consolidation | 2.86, 2.94, **2.95B** |

| | | | | |
|---|---|---|---|---|
| 2 | 1 | 6 | Assessment<br>Feedback | |
| 2 | 1 | 7 | Section 3: Reproduction and inheritance<br>a) Reproduction | 3.1, 3.2, 3.3, 3.4, 3.6, 3.7 |
| 2 | 1 | 8 | a) Reproduction | 3.5, 3.8, 3.13<br>*Practical: investigate the conditions needed for seed germination* |
| 2 | 1 | 9 | a) Reproduction | 3.9, **3.10B**, 3.11, 3.12 |
| 2 | 1 | 10 | Consolidation<br>Assessment | |
| 2 | 1 | 11 | Feedback<br>b) Inheritance | 3.14, 3.15, **3.16B, 3.17B, 3.18B** |
| 2 | 2 | 1 | b) Inheritance | 3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32 |
| 2 | 2 | 2 | b) Inheritance | 3.19, 3.20, **3.21B**, 3.22, 3.23, 3.24, 3.25 |
| 2 | 2 | 3 | b) Inheritance | 3.33, 3.34, **3.35B, 3.36B, 3.37B**, 3.38, 3.39 |
| 2 | 2 | 4 | Consolidation<br>Assessment | |
| 2 | 2 | 5 | Feedback<br>Section 4: Ecology and the environment<br>a) The organism in the environment | 4.1, **4.3B**, 4.5 |
| 2 | 2 | 6 | a) The organism in the environment | 4.2, **4.4B**<br>*Practical: investigate the population size of an organism in two different areas using quadrats* |

| | | | | |
|---|---|---|---|---|
| | | | | *Practical: investigate the distribution of organisms in their habitats and measure biodiversity using quadrats* |
| 2 | 2 | 7 | b) Feeding relationships | 4.6, 4.7, 4.8, 4.9 |
| 2 | 2 | 8 | c) Cycles within ecosystems | 4.10, **4.11B, 4.18B** |
| 2 | 2 | 9 | d) Human influences on the environment | 4.12, 4.13, 4.14, 4.15, 4.16, 4.17 |
| 2 | 2 | 10 | Consolidation Assessment | |
| 2 | 3 | 1 | Feedback<br>Section 5: Use of biological resources<br>a) Food production | 5.1, 5.2, 5.3, 5.4 |
| 2 | 3 | 2 | a) Food production<br>b) Selective breeding | 5.5, 5.6, **5.9B**, 5.10, 5.11<br>*Practical: investigate the role of anaerobic respiration by yeast in different conditions* |
| 2 | 3 | 3 | a) Food production<br>c) Genetic modification (genetic engineering) | 5.7, 5.8, 5.12, 5.13 |
| 2 | 3 | 4 | c) Genetic modification (genetic engineering)<br>d) Cloning | 5.14, 5.15, 5.16, **5.17B, 5.18B** |
| 2 | 3 | 5 | d) Cloning<br>Consolidation & Assessment | **5.19B, 5.20B** |
| 2 | 3 | | Feedback and revision | |

We also have a dedicated scheme of work for this qualification here.

# Delivery of the qualification – transferable skills

**The need for transferable skills**

In recent years, higher education institutions and employers have consistently flagged the need for learners to develop a range of transferable skills to enable them to respond with confidence to the demands of undergraduate study and the world of work.

The Organisation for Economic Co-operation and Development (OECD) defines skills, or competencies, as 'the bundle of knowledge, attributes and capacities that can be learned and that enable individuals to successfully and consistently perform an activity or task and can be built upon and extended through learning.'[1]

To support the design of our qualifications, the Pearson Research Team selected and evaluated seven global 21st-century skills frameworks. Following on from this process, we identified the National Research Council's (NRC) framework [2] as the most evidence-based and robust skills framework, and have used this as a basis for our adapted skills framework.


The framework includes cognitive, intrapersonal skills and interpersonal skills.

The NRC framework is included alongside literacy and numeracy skills.

The skills have been interpreted for this specification to ensure they are appropriate for the subject. All of the skills listed are evident or accessible in the teaching, learning and / or assessment of the qualification. Some skills are directly assessed. Pearson materials will support you in identifying these skills and developing these skills in learners.

A full subject interpretation of each skill, with mapping to show opportunities for learner development is given on the subject pages of our website: qualifications.pearson.com