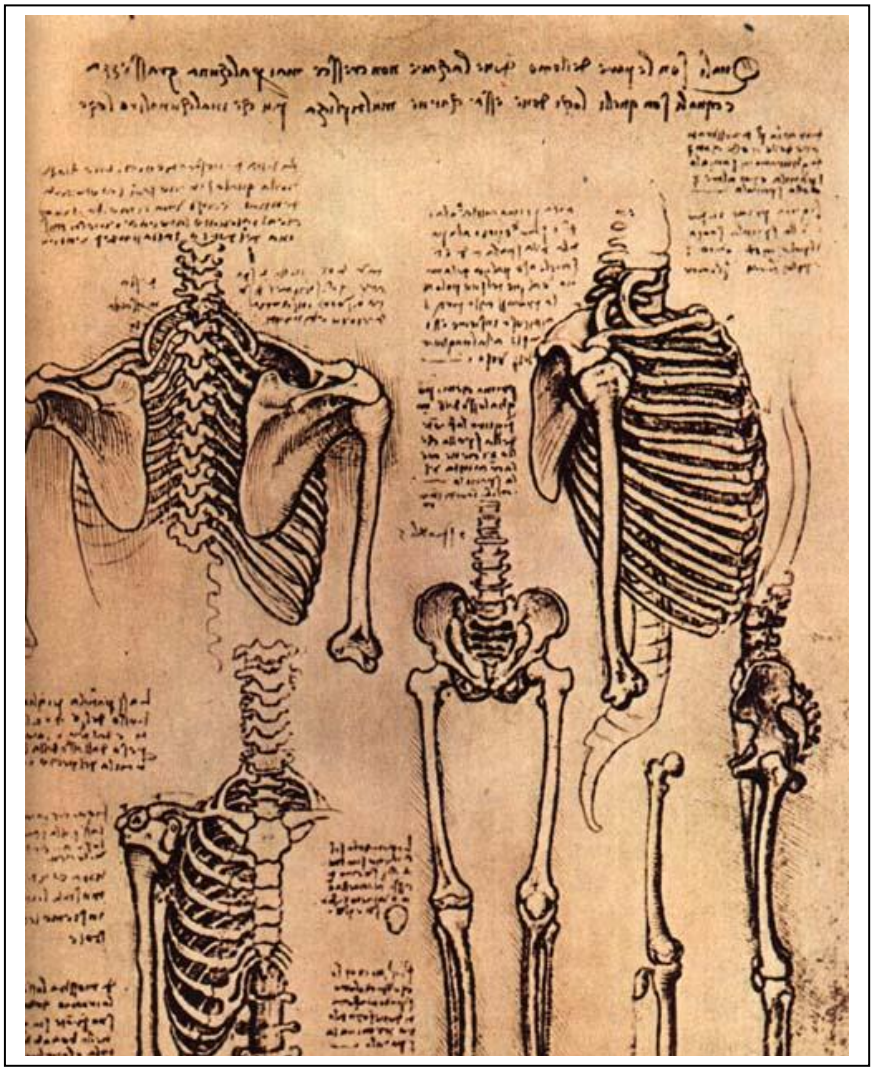
Newstead Wood School
Sixth Form
September 2025

A Level Biology Handbook



*"*Human subtlety will never devise an invention more beautiful, more simple or more direct than does nature because in her inventions nothing is lacking, and nothing is superfluous."
Leonardo da Vinci (1452-1519)

When you have read this handbook, you need to complete Bridging Unit and bring this to your first Biology lesson in September 2025

Make sure that you use the information contained in this handbook throughout the year.

Contents

Welcome to Biology at A Level

The Biology Department

Ms Robinson is the **Head of Biology** and **Mrs Lebreuilly** (Head of Science), **Mr Mansell**, **Mr Botley, Mrs Bayraktar** and **Mr Eldred** teach A Level Biology.

Year 12 Biology

The A Level Biology course builds on concepts and skills that have been developed at GCSE. It presents Biology as exciting, relevant and challenging. Lessons facilitate learning and you will supplement them with independent study to make sure that you fully understand the details of the underlying principles and that to ensure that you extend your knowledge. Much more emphasis is put on you to complete work as an independent learner.

We aim:

- To develop your interest in and enthusiasm for Biology
- To develop skills, including practical techniques, that will allow further study and careers in Biology and Biology-related subjects
- To develop your knowledge and understanding of the many different areas of Biology and how they relate to each other
- To give an insight into how society makes decisions about scientific issues and the importance of science in world economies
- To extend your knowledge beyond the specification providing you with a broader and more in-depth understanding of biological principles

In Practical Tasks you should be able to:

- Demonstrate and describe ethical, safe and skilful practical techniques, selecting appropriate qualitative and quantitative methods
- Make, record and communicate reliable and valid observations and measurements with appropriate precision and accuracy
- Analyse, interpret, explain and evaluate the methodology, results and impact of your own and others' investigations

Policies and Recommendations

Independent practice, midpoint assessments and tests

For each topic, you will be given an independent practice homework at the start, which you are expected to have completed by the end of the topic. Your teacher will expect you to bring the independent practice homework to a designated lesson, so that you can be provided with feedback on your work and so that we can monitor the level of effort you are making with your independent biology studies. More than one failure to have your completed independent practice work with you at the appropriate time will be considered evidence that you are not making a good level of effort in your studies. You will also be given other homework to complete as part of the scheme of learning, some of this will be set on UpLearn. In addition to this, there will be regular midpoint assessments (starter activities which you will be told in advance to prepare for). You will also have regular scheduled tests to assess your progress in several topics combined. This allows for spaced retrieval practice.

You will be given adequate warning of when a test will take place. Results are recorded centrally and are used to assess your current performance. If you miss a test, for any reason, it is your responsibility to do the test by arrangement with your teacher within one week. We aim to mark all tests within a week of the original test date and to go through it in class as soon as possible.

Attendance

Attendance of lessons is a key factor to success. Avoid missing lessons unless it is completely necessary. Appointments such as medical or dental appointments should be made outside of lesson time unless urgent. If you do miss lessons you are expected to be proactive and catch up on the work missed. If you know in advance that you will miss a lesson you should speak to the member of staff (or email) before the lesson. If you miss a test, you must contact your teacher and arrange to do the test as soon as possible.

The onus is on you to keep up to date with your work. Good working routines and organising your work between lessons will help to lead to successful outcomes.

Punctuality

You are expected to arrive punctually to all lessons. If you are very late for a lesson, your teacher will ask you to make up this time outside of lessons (during lunchtime and/or after school).

Independent study

It is essential that you do not get left behind. Good grades are not achieved by a last-minute spurt. Use your homework and independent study time wisely. **You should spend a *minimum* of 5 hours a week doing Biology outside lessons.** You may be revising for tests, practising questions, writing up practical assignments or researching new areas. It is a good idea to read ahead of the next lesson and you must always read through your notes and consolidate them after the lesson. This gives you an opportunity to check your understanding and ask for clarification, if needed. For each topic you must answer the Summary and Application questions from the textbook. It is also recommended that you complete recall questions as a summary of each topic, to improve retrieval practice. The correct understanding and use of biological terminology is a key part of the A Level course. Definition glossaries are included in each section of work to aid learning.

Homework

Homework will be set via Microsoft Teams.

Deadlines

We will give you reasonable notice of deadlines, which we expect you to meet every time. If, for any reason, you are unable to keep to a deadline please see your teacher immediately. Missed work may mean that you stay at lunch time or after school to catch up. Late work may not be marked at the same time as that of the rest of your class: it is in your interest to keep up-to-date and organised.

Learning Environment

A positive learning environment is expected with respect for others' views and ways of learning. The authority of the teacher should be respected at all times.

Equipment

It is expected that you will bring the following to every lesson:

- Pens.
- Sharp HB pencil.
- 30cm ruler.
- Calculator.
- Relevant work pack for the current topic of study.

Footwear: ideally, for health and safety reasons, rubber-soled flat covered shoes (no open sandals, peep toe shoes) should be worn in laboratories.

Please note that it is your responsibility to protect your clothing and yourself and to take adequate care when walking around a lab.

Health and Safety

Laboratory rules are found in each of the labs. It is most important to remember that when you are in a science lesson, you are expected to take reasonable care for the health and safety of yourself and others who might be affected by your actions or omissions. Practical work can only be carried out with a science teacher present. (See Laboratory Rules for Sixth Form Students, Page 7.)

And finally

Biology is an exciting and dynamic subject. Take all opportunities to broaden your knowledge: read newspapers and magazines, watch television programmes, listen to the podcasts and the radio, attend lectures, visit exhibitions. (See the biology reading list for suggestions). An unfamiliar situation in an examination may not be so unfamiliar!

Good luck with the course and ENJOY your study of Biology!

Laboratory Rules for Sixth Form Students at Newstead Wood School

When you are in a science lesson, you are expected to take reasonable care for the health and safety of yourself and any other person who might be affected by your acts or omissions.

- You may enter a laboratory during lesson times, when there is no member of staff present provided you are sure that a science teacher is within call in an adjacent laboratory or prep room. However, practical work can only be carried out if there is a science teacher present.
- Outdoor coats/jackets and large bags should not be brought into laboratories.
- You must not touch any materials or equipment unless told to do so by a teacher or have previously clear instructions that you may do so. If you are not sure what to do, ask the teacher or the technician before you start using apparatus or materials.
- Class practicals have been risk assessed and your teacher will warn you of any potential hazards. Chemical hazards are found on Student Safety Sheets which are found in the laboratories.
- When planning any sort of individual investigation you must carry out a **Risk Assessment**, write down any hazards that might be involved and discuss them with your teacher **before** starting the practical work. Chemical hazards are found on the Student Safety Sheets.
- You must wear eye protection whenever there is a risk to your eyes. You must not rub your eyes without washing your hands first.
- When using a Bunsen burner make sure that you tie back your hair and keep any loose clothing away from the flame. You should be standing, NOT sitting, when using a Bunsen.
- You must not taste anything or put anything in your mouth when in a science laboratory. This includes sweets, food, fingers, pencils, all of which might have picked up poisonous chemicals from laboratory workbenches.
- If chemicals get on your hands or other parts of your body, wash them off and check with the teacher that this is sufficient. Wash your hands after all experimental work.
- Do not put waste solids down the sink. Do not pick up broken glass except with a dustpan and brush. Broken glass is put in the special 'broken glass bins'.
- Keep your workbench clean and tidy and put any folders or textbooks in a safe place.
- Report any accident to the teacher immediately. If you suffer a heat or chemical burn, put the injury under a **gentle** stream of cold water from a tap.
- In the event of an emergency **stop** any practical work, **turn off** any apparatus, **sit quietly** and wait for instructions.

Overview of Year 12

Date	Content
Half Term 1	**Unit 1:** 1.1 Biological Molecules 1.2 Enzymes **Unit 2:** 2.1 Cell Structure 2.2 Mitosis
Half Term 2	**Unit 1:** 1.2 Enzymes continued 1.3 Nucleic acids **Unit 2:** 2.2 Mitosis continued 2.3 Transport Across the Membrane
Half Term 3	**Unit 1:** 1.4 Protein Synthesis 1.5 Exchange **Unit 2:** 2.4 Immunity 2.5 Mass Transport
Half Term 4	**Unit 1:** 1.5 Exchange continued 1.6 Genetic Diversity **Unit 2:** 2.5 Mass Transport continued
Half Term 5	**Unit 1:** 1.7 Biodiversity **Unit 2:** 2.6 Maths for Biology
Half Term 6	**Internal Year 12 exams.** **Unit 3:** 3.1 Populations in Ecosystems 3.2 Nutrient cycles Essay writing skills introduction.

Specification - Topics

AQA Biology, AS (7401), A Level (7402)
Stand-alone qualifications, but AS and Year 1 A Level will be co-taught

http://www.aqa.org.uk

Subject Content

1. Biological molecules
2. Cells
3. Organisms exchange substances with their environment
4. Genetic information, variation and relationships between organisms
5. Energy transfers in and between organisms **(A Level only)**
6. Organisms respond to changes in their internal and external environments **(A Level only)**
7. Genetics, populations, evolution and ecosystems **(A Level only)**
8. The control of gene expression **(A Level only)**

Written Assessments

AS

Paper 1	+	Paper 2
What's assessed Any content from topics 1-4, including relevant practical skills		What's assessed Any content from topics 1-4, including relevant practical skills
Assessed as • Written exam : 1 hour 30 minutes • 75 marks • 50% of AS		Assessed as • Written exam : 1 hour 30 minutes • 75 marks 50% of AS
Questions • 65 marks: short answer questions • 10 marks: comprehension question		Questions • 65 marks: short answer questions • 10 marks: extended response questions

A Level

Paper 1	+	Paper 2	+	Paper 3
What's assessed Any content from topics 1-4, including relevant practical skills		What's assessed Any content from topics 5-8, including relevant practical skills		What's assessed Any content from topics 1-8, including relevant practical skills
Assessed as • Written exam : 2 hours • 91 marks • 35% of A Level		Assessed as • Written exam : 2 hours • 91 marks • 35% of A Level		Assessed as • Written exam : 2 hours • 78 marks • 30% of A Level
Questions • 76 marks: a mixture of short and long answer questions • 15 marks: extended response questions		Questions • 76 marks: a mixture of short and long answer questions • 15 marks: comprehension question		• 38 marks: structured questions, including practical techniques • 15 marks: critical analysis of given experimental data • 25 marks: one essay from a choice of two titles

Assessment objectives

These are set by Ofqual.

A01	A02	A03
Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures.	Apply knowledge and understanding of scientific ideas, processes, techniques and procedures: • in a theoretical context • in a practical context • when handling qualitative data • when handling quantitative data	Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to • make judgements and reach conclusions • develop and refine practical design and procedures

Weighting of assessment objectives for AS Biology

Assessment objective	Component weightings (approx. %)		Overall weighting (approx. %)
	Paper 1	Paper 2	
A01	47-51	3-37	35-40
A02	35-39	41-45	50-45
A03	13-17	21-25	20-25
Overall rating of components	50	50	100

Weighting of assessment objectives for A level Biology

Assessment objective	Component weightings (approx. %)			Overall weighting (approx. %)
	Paper 1	Paper 2	Paper 3	
A01	44-48	23-27	28-32	30-35
A02	30-34	52-56	35-39	40-45
A03	20-24	19-23	31-35	25-30
Overall rating of components	35	35	30	100

10% of the overall assessment of AS or A level Biology will contain mathematic skills equivalent to GCSE Maths at A*-C.
At least 15% of the overall assessment of AS or A level Biology will assess knowledge, skills and understanding in relation to practical work.

Mathematical requirements

For a full table of the mathematical skills and exemplifications that are developed over the Biology course, go to the weblink below:
http://www.aqa.org.uk/subjects/science/as-and-A Level/Biology-7401-7402/mathematical-requirements-and-exemplifications

Topic overview:

Year 12

Unit 1	Topic	Pages in textbook 1	Unit 2	Topic	Pages in textbook 1
1.1	Biological molecules	4 – 20 and water 48&49.	2.1	Cells	58-76.
1.2	Enzymes	23 – 33 and digestion 151-157.	2.2	Cell cycle	77-81
1.3	Nucleic acids	36-47	2.3	Transport across membranes	84-97.
1.4	Protein synthesis	202-234.	2.4	Immunity	102-121.
1.5	Exchange	130-149	2.5	Mass transport	161-193.
1.6	Genetic diversity	220-234.	2.6	Maths for Biology	265 -277.
1.7	Biodiversity	237 -256.			

Year 13

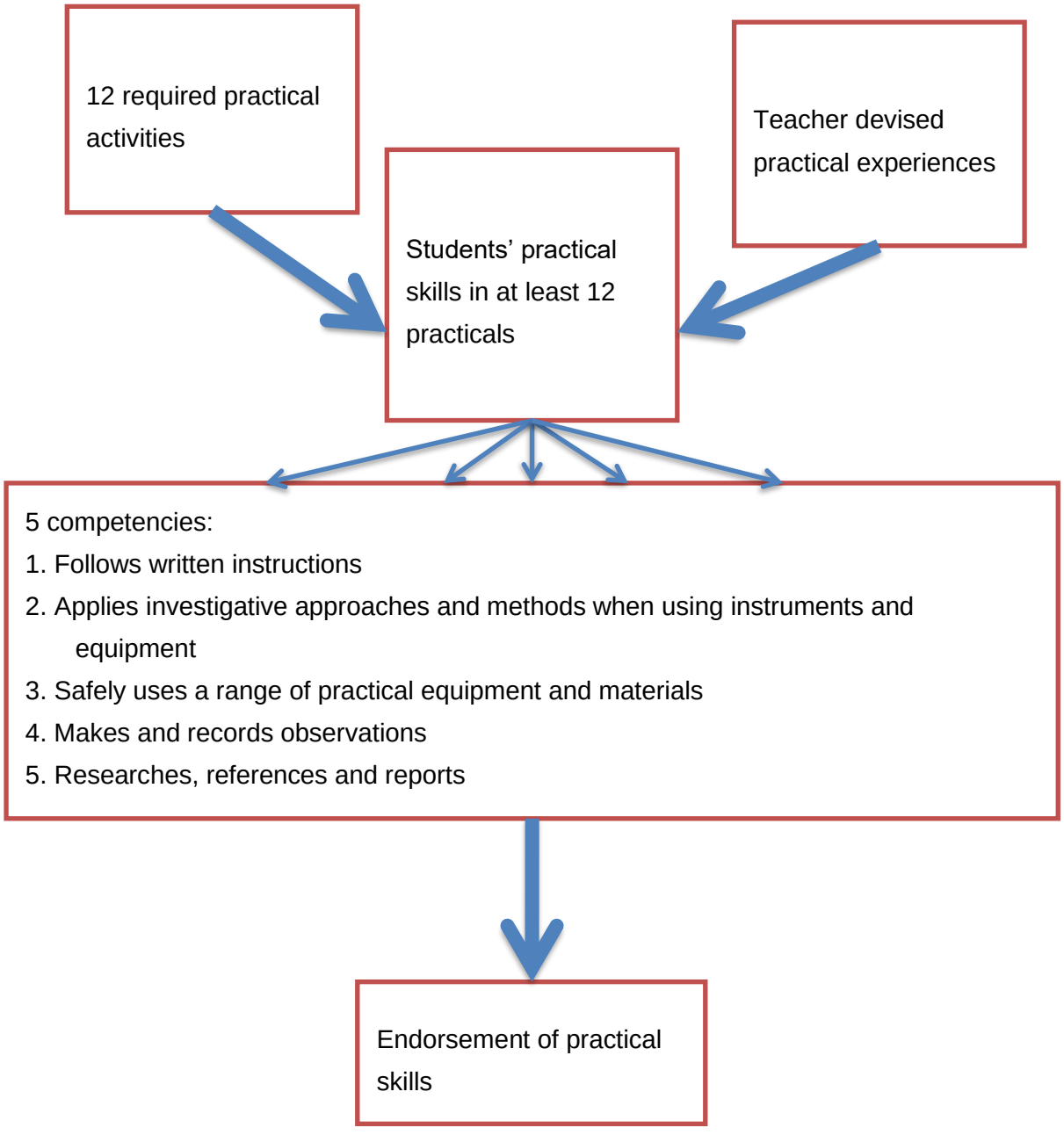
Unit 3	Topic	Pages in textbook 2	Unit 4	Topic	Pages in textbook 2
3.1	Populations in ecosystems *	202-226	4.1	Nerves	82-102
3.2	Nutrient cycles *	42-50	4.2	Response to stimuli	62-79
3.3	Photosynthesis	4-16	4.3	Muscles	103-111
3.4	Respiration	19-31	4.4	Homeostasis	114-142
3.5	Energy transfers in ecosystems	34-41	4.5	Gene expression	236-263
3.6	Genetics	154-181	4.6	DNA technology	266-291
3.7	Evolution	184-199			

* usually taught in the summer of year 12.

Practical Endorsement

Teachers will assess students' competence at carrying out practical work. They will assess each student on at least 12 different occasions. These practical assessments are the required practicals that have been written into the courses.

At the end of the course, teachers will decide whether or not to award a pass in the endorsement of practical skills. The teacher must be confident that the student has shown a level of mastery of practical work good enough for the student to go on to study science subjects at university.



Biology apparatus and techniques

Apparatus & Techniques

AT a	use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature, length and pH)
AT b	use appropriate instrumentation to record quantitative measurements, such as a colorimeter or photometer
AT c	use laboratory glassware apparatus for a variety of experimental techniques to include serial dilutions
AT d	use of light microscope at high power and low power, including use of a graticule
AT e	produce scientific drawing from observation with annotations
AT f	use qualitative reagents to identify biological molecules
AT g	separate biological compounds using thin layer/paper chromatography or electrophoresis
AT h	Safely and ethically use organisms to measure: plant or animal responses; physiological functions
AT i	use microbiological aseptic techniques, including the use of agar plates and broth
AT j	safely use instruments for dissection of an animal organ, or plant organ
AT k	use sampling techniques in fieldwork
AT l	use ICT such as computer modelling, or data logger to collect data, or use software to process data

Biology required activities for AS (A Level Year 1)

Required activity	Apparatus and technique reference
1. Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction	a, b, c, f, l
2. Preparation of stained squashes of cells from plant root tips; set-up and use of an optical microscope to identify the stages of mitosis in these stained squashes and calculation of a mitotic index	d, e, f
3. Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue	c, h, j, l
4. Investigation into the effect of a named variable on the permeability of cell-surface membranes	a, b, c, j, l
5. Dissection of animal or plant gas exchange or mass transport system or of organ within such a system	e, h, j
6. Use of aseptic techniques to investigate the effect of antimicrobial substances on microbial growth	c, i

These practicals have been included in the AS/A Level Year 1 Biology course and evidence that you have completed them successfully covering the 5 competences (or CPAC = Common Practical Assessment Criteria, see Appendix 1) will be kept in your Required Practical lab book.

It is part of your responsibility to ensure all necessary work is given to your Biology teacher for assessment & that your required practical lab book is complete and kept safely.

You will be issued with a Practical Skills Checklist AND a sheet to record completion & submission of your required practicals. The record sheet MUST be kept up-to-date.

Note that all schools are monitored by AQA to assess that the Pass and Fail for Practical Skills is awarded fairly. This outcome will appear on your UCAS/Higher Education applications. A 'FAIL', even if you get an A grade in your written papers, means that you will not be awarded with your qualification.

Practical skills to be assessed in written papers

Overall, at least 15% of the marks for an A level qualification will require the assessment of practical skills.

In order to be able to answer these questions, students need to have developed the following skills:

Independent thinking

Solve problems set in practical contexts.
Apply scientific knowledge to practical contexts.

Use and application of scientific methods and practices

Comment on experimental design and evaluate scientific methods.
Present data in appropriate ways.
Evaluate results and draw conclusions with reference to measurement uncertainties and errors.
Identify variables including those that must be controlled.

Numeracy and the application of mathematical concepts in a practical context

Plot and interpret graphs.
Process and analyse data using appropriate mathematical skills as exemplified in the mathematical appendix for each science.
Consider margins of error, accuracy and precision of data.

Instruments and equipment

Know and understand how to use a wide range of experimental and practical instruments, equipment and techniques appropriate to the knowledge and understanding included in the specification.

The language of measurement

The following subject specific vocabulary provides definitions of key terms used in AQA's AS and A Level Science specifications

Accuracy

A measurement result is considered accurate if it is judged to be close to the true value.

Calibration

Marking a scale on a measuring instrument.
This involves establishing the relationship between indications of a measuring instrument and standard or reference quantity values, which must be applied.
For example, placing a thermometer in melting ice to see whether it reads $0^{o}C$, in order to check if it has been calibrated correctly.

Data

Information, either qualitative or quantitative, that has been collected.

Errors

See also uncertainties.

measurement error

The difference between a measured value and the true value.

anomalies

These are values in a set of results which are judged not to be part of the variation caused by random uncertainty.

random error

These cause readings to be spread about the true value, due to results varying in an unpredictable way from one measurement to the next.
Random errors are present when any measurement is made, and cannot be corrected. The effect of random errors can be reduced by making more measurements and calculating a new mean.

systematic error

These cause readings to differ from the true value by a consistent amount each time a measurement is made.
Sources of systematic error can include the environment, methods of observation or instruments used.
Systematic errors cannot be dealt with by simple repeats. If a systematic error is suspected, the data collection should be repeated using a different technique or a different set of equipment, and the results compared.

zero error

Any indication that a measuring system gives a false reading when the true value of a measured quantity is zero, e.g. the needle on an ammeter failing to return to zero when no current flows.
A zero error may result in a systematic uncertainty.

Evidence

Data which has been shown to be valid.

Fair test

A fair test is one in which only the independent variable has been allowed to affect the dependent variable.

Hypothesis
A proposal intended to explain certain facts or observations.

Interval
The quantity between readings, e.g. a set of 11 readings equally spaced over a distance of 1 metre would give an interval of 10 centimetres.

Precision
Precise measurements are ones in which there is very little spread about the mean value.
Precision depends only on the extent of random errors – it gives no indication of how close results are to the true value.

Prediction
A prediction is a statement suggesting what will happen in the future, based on observation, experience or a hypothesis.

Range
The maximum and minimum values of the independent or dependent variables; important in ensuring that any pattern is detected.
For example, a range of distances may be quoted as either:
'From 10cm to 50 cm'
or
'From 50 cm to 10 cm'

Repeatable
A measurement is repeatable if the original experimenter repeats the investigation using same method and equipment and obtains the same results.

Reproducible
A measurement is reproducible if the investigation is repeated by another person, or by using different equipment or techniques, and the same results are obtained.

Resolution
This is the smallest change in the quantity being measured (input) of a measuring instrument that gives a perceptible change in the reading.

Sketch graph
A line graph, not necessarily on a grid, that shows the general shape of the relationship between two variables. It will not have any points plotted and although the axes should be labelled they may not be scaled.

True value
This is the value that would be obtained in an ideal measurement.

Uncertainty
The interval within which the true value can be expected to lie, with a given level of confidence or probability, e.g. “the temperature is 20 °C ± 2 °C, at a level of confidence of 95 %.

Validity

Suitability of the investigative procedure to answer the question being asked. For example, an investigation to find out if the rate of a chemical reaction depended upon the concentration of one of the reactants would not be a valid procedure if the temperature of the reactants was not controlled.

Valid conclusion

A conclusion supported by valid data, obtained from an appropriate experimental design and based on sound reasoning.

Variables

These are physical, chemical or biological quantities or characteristics.

categoric variables

Categoric variables have values that are labels. E.g. names of plants or types of material.

continuous variables

Continuous variables can have values (called a quantity) that can be given a magnitude either by counting (as in the case of the number of shrimp) or by measurement (e.g. light intensity, flow rate etc).

control variables

A control variable is one which may, in addition to the independent variable, affect the outcome of the investigation and therefore has to be kept constant or at least monitored.

dependent variables

The dependent variable is the variable of which the value is measured for each and every change in the independent variable.

independent variables

The independent variable is the variable for which values are changed or selected by the investigator.

Command words

Command words are the words and phrases used in exams and other assessment tasks that tell students how they should answer the question.

The following command words are taken from Ofqual's official list of command words and their meanings that are relevant to this subject. In addition, where necessary, we have included our own command words and their meanings to complement Ofqual's list.

Analyse	Separate information into components and identify their characteristics
Annotate	Add notation or labelling to a graph, diagram or other drawing
Apply	Put into effect in a recognised way
Argue	Present a reasoned case
Assess	Make an informed judgement
Calculate	Work out the value of something
Comment	Present an informed opinion
Compare	Identify similarities and/ or differences
Complete	Finish a task by adding to given information
Consider	Review and respond to given information
Contrast	Identify differences
Criticise	Access worth against explicit expectations
Debate	Present different perspectives on an issue
Deduce	Draw conclusions from information provided
Define	Specify meaning
Describe	Give an account of
Design	Set out how something will be done
Determine	Use given data or information to obtain an answer

Develop	Take forward or build upon given information
Discuss	Present key points
Distinguish	List the differences between different items
Draw	Produce a diagram
Estimate	Assign an approximate value
Evaluate	Judge from available evidence
Explain	Give reasons
Explore	Investigate without preconceptions about the outcome
Give	Produce an answer from recall or from given information
Identify	Name or otherwise characterise
Justify	Support a case with evidence
Label	Provide appropriate names on a diagram
List	List a number of features or points without further elaboration
Name	Identify using a recognised technical term
Outline	Set out main characteristics
Predict	Give a plausible outcome
Relate	Give a technical term or its equivalent
Show	Provide structured evidence to reach a conclusion
Sketch	Draw approximately *See sketch graph under The language of measurement (axes should be labelled but not necessarily drawn to scale)*
State	Express in clear terms
Suggest	Present a possible case

Assessment in Biology

You will receive regular feedback on your performance. There are key points during the year when your performance is formally assessed and reported via Arbor. Attendance records, punctuality to lessons, independent study and adherence to deadlines are included in these assessments of your overall effort together with a ***standardised*** performance grade, which is based on your test results and school examinations. If your current performance grade is below your target minimum grade (tmg) then you are *NOT* on track to reach this grade in your A Level examinations. If this is the case, you cannot be using independent study time effectively and you need to re-assess your learning strategies with teacher intervention and help as necessary. If this happens, you will be asked to attend compulsory additional support sessions.

Learning Conversations

Periodically, your teacher will talk to you about your progress. The prompts below may be discussed in your Learning Conversation:

1. Target grade
2. Current performance
3. AO1 / AO2 / AO3 skills development
4. Independent study routine
5. Revision strategies
6. Extra support and interventions

You can use the following tick list to prepare for your learning conversation:

I have:	Yes	No
Kept up to date		
Understood all the work		
Read over work between lessons		
Used extra resources on Sharepoint		
Used my text book and answered all Summary and Application questions		
Asked if I don't understand		
Developed my practical skills		
Kept my notes in a well-organised way		
Improved my application of knowledge by answering questions		
Focussed on learning objectives (ticking them off as they are covered and understood)		
Used learning objectives effectively as the basis of my revision		
Revised to the best of my ability to achieve test marks that reflect my ability		
Looked at the detailed AQA specification and know what I am expected to understand and learn for the topics covered so far		
Contributed positively to class discussion by answering questions, or asking questions		
Persevered with concepts that I don't understand so that I do now understand them		

What to do when stuck…

Have you used your textbook?
Have you looked on Sharepoint for extra resources?
Have you consulted with your classmates?
Have you asked your Biology teacher?

Your teachers are available throughout the day to speak to. A good time to catch your teacher might be after a lesson, before school, at morning break, at lunchtime or after school. Your teacher might then arrange a specific time to meet you depending on the support that you need. Remember that you are responsible for your own learning and the onus is on you to seek out help. If you struggle to find your teacher, then an email may be appropriate:

Mrs J Lebreuilly	jlebreuilly@newsteadwood.co.uk
Mr Mansell	amansell@newsteadwood.co.uk
Miss Robinson	srobinson@newsteadwood.co.uk
Mr Botley	abotley@newsteadwood.co.uk
Mrs Bayraktar	pbayraktar@ newsteadwood.co.uk
Mr Eldred	weldred@newsteadwood.co.uk

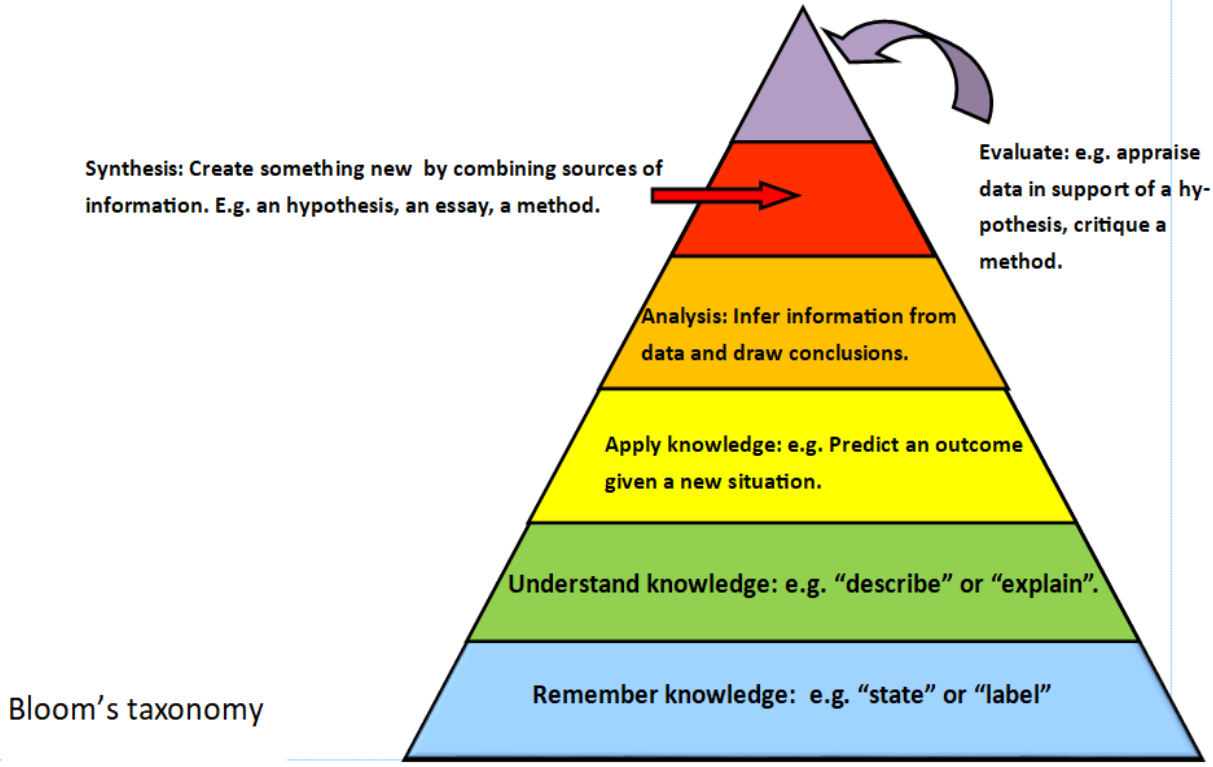
Use your email address that you use regularly for school work. Ensure you check your email account regularly as this is a common form of communication about course details.

Progression

Many students who have studied Biology in recent years have gone on to study a Biology-related subject at a top university.

Your success in A level Biology is going to be measured not only in terms of what you can remember but also what you are able to do with that knowledge. It is therefore essential that you are practising the skills outlined below throughout the A level Biology course.

Whilst you are given many opportunities to develop these skills in lessons, it is also important that you are mindful of your own progression, so that you can take steps to further your development. (An essential part of independent learning). Refer to these 6 levels regularly to determine the level you are working at in each topic.



Bloom's taxonomy

Leadership and Enrichment Opportunities

Societies: Become an active member of a school science society or carbon council.

Mentoring: Take opportunities to support your peers and students in lower years.

Student Subject Leaders support the Biology department.

Departmental resources: Take opportunities to develop departmental resources and use the school library.

Journal Subscription: We subscribe to the digital version of the Biological Sciences Review which you should read frequently. It covers science related to the A level course, extension material, science job profiles and much more.

Useful websites: You will find links on Sharepoint.

The Wellcome Collection is strongly recommended for exhibitions and lectures: http://www.wellcomecollection.org/Default.aspx Follow the link to 'What's On'.

Professional Placements (designated week for this in July). Start looking for opportunities now.

Intermediate Biology Olympiad: You will be offered an opportunity to take part in this national competition run by the Royal Society of Biology.

Attend lectures including any organised by the Biology SSLs (and/or help in the organisation of these lectures).

The Media: Keep up to date with science-related current affairs – radio, TV, newspapers, journals.

We also like to encourage you to use your initiative and to be proactive, so if you discover an enrichment opportunity, speak with us and we will try to take it forward.

Resources and Equipment

Text book

AQA Biology A Level Year 1 and AS 2nd Edition by Glenn Toole & Susan Toole
Oxford University Press. ISBN 978-0-19-835176-4

It is also possible, to purchase one textbook that covers both years of the course: AQA Biology A level 2nd Edition by Glenn Toole and Susan Toole, Oxford University Press. ISBN 978-0-19-835177-1

Students are asked to purchase their own textbook. Many students like to annotate and highlight their personal copy to help with their learning. Available to purchase on-line & from bookshops.

Appendix 1

Common Practical Assessment Criteria (CPAC)

The criteria for a Pass

In order to be awarded a Pass a learner must, by the end of the practical science assessment, consistently and routinely meet the criteria in respect of each competency listed below. A learner may demonstrate the competencies in any practical activity undertaken as part of that assessment throughout the course of study.

Learners may undertake practical activities in groups. However, the evidence generated by each learner must demonstrate that he or she independently meets the criteria outlined below in respect of each competency.

Such evidence:
(a) will comprise both the Learner's performance during each practical activity and his or her contemporaneous record of the work that he or she has undertaken during that activity, and
(b) must include evidence of independent application of investigative approaches and methods to practical work.

CPAC 1: **Follows written procedures**	(a) Correctly follows instructions to carry out the experimental techniques or procedures.
CPAC 2: **Applies investigative approaches and methods when using instruments and equipment**	(a) Correctly uses appropriate instrumentation, apparatus and materials (including ICT) to carry out investigative activities, experimental techniques and procedures with minimal assistance or prompting. (b) Carries out techniques or procedures methodically, in sequence and in combination, identifying practical issues and making adjustments when necessary. (c) Identifies and controls significant quantitative variables where applicable, and plans approaches to take account of variables that cannot readily be controlled. (d) Selects appropriate equipment and measurement strategies in order to ensure suitably accurate results.
CPAC 3: **Safely uses a range of practical equipment and materials**	(a) Identifies hazards and assesses risks associated with these hazards, making safety adjustments as necessary, when carrying out experimental techniques and procedures in the lab or field. (b) Uses appropriate safety equipment and approaches to minimise risks with minimal prompting.
CPAC 4: **Makes and records observations**	(a) Makes accurate observations relevant to the experimental or investigative procedure. (b) Obtains accurate, precise and sufficient data for experimental and investigative procedures and records this methodically using appropriate units and conventions.
CPAC 5: **Researches, references and reports**	(a) Uses appropriate software and/or tools to process data, carry out research and report findings. (b) Sources of information are cited demonstrating that research has taken place, supporting planning and conclusions.