



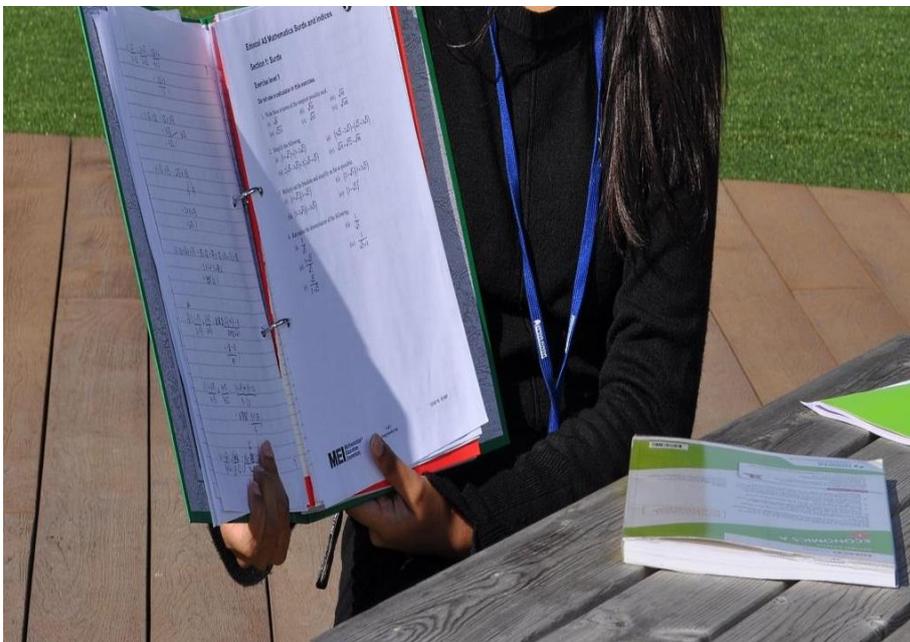
LONDON ACADEMY
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TOTTENHAM

The Place for Academic Rigour



LAE Tottenham Preparatory Tasks for Offer Holders



Preparatory Task: Biology

Welcome to A-level Biology!

We hope you are looking forward to undertaking your A level Biology course.

Even at the best of times moving from GCSE Science to A level is a **massive jump**. For your year group, having had so much disruption and not having consolidated your learning through shared public exams as past year groups have, it may be doubly so. The more you can do to get yourself **prepared** the better.

*One of the keys to being a successful student in any subject, but especially in the content-rich world of Biology, is to **be ahead** - you always need to have **already read over** the content that will be covered in your next lesson.*

Successful Biology students

- **read ahead**, allowing them to arrive in lessons already familiar with terminology and key ideas, and armed with questions.
- independently write their own notes after **each lesson**, using textbooks and their notes from class to consolidate their understanding.

At LAET you will have **two** Biology teachers, taking you on complementary paths through your A level.

Your first lessons with one teacher will look at cells, whilst the other will begin with the biomolecular world; carbohydrates, lipids, proteins and so on.

In order to 'read ahead' in preparation for your first lessons we want you to **revisit four subjects** from your GCSE; **Cells, Metabolism, Matter and Energy**.

We would like you to produce fresh, neat, well organised, illustrated, sensibly coloured notes on your current understanding of these four topics, on A4 paper **ready to go into your A level Independent Study Notes folder** when we start the term. You will show your notes to your teachers when you first meet them.

Successful note taking

- uses the **specification assessment objectives** as subheadings
- comes from multiple sources, including several textbooks
- **is not completed during lessons** - your jottings taken in class (whilst you interact with your teacher) should be treated as just another source
- **includes** catching up what you missed
- uses colour **effectively** (eg keywords always red, notes on structures coloured differently to notes on functions)
- is not squishing onto the page

This is the advice we give our students about notes. The content of A level Biology is a lot more detailed than you are used to, and there is much more of it. Your notes will play a very big part in your success.

We will be **especially impressed** if you have considered the A level content coming into those first lessons. We will *not* be impressed if you turn up with your old unimproved GCSE materials.

The four topics that we would like you to make independent study notes on are detailed below. The aim of note making is to consolidate your knowledge and develop study material, so make sure you have a thorough understanding of each topic.

All of your GCSE science will prove useful at A Level.

Do not worry if you didn't do triple - it is the combined science topics that will be particularly helpful.

Cells	
	I can explain how the main subcellular structures of eukaryotic cells (plants and animals) and prokaryotic cells are related to their functions, including the nucleus/genetic material, plasmids, mitochondria, chloroplasts and cell membranes
	I can explain how electron microscopy has increased our understanding of subcellular structures.
	I can describe the process of mitosis in growth, including the cell cycle
	I can explain the importance of cell differentiation
	I can explain how substances are transported into and out of cells through diffusion, osmosis and active transport.

Metabolism	
	I can explain the mechanism of enzyme action including the active site, enzyme specificity and factors affecting the rate of enzymatic reaction
	I can explain the importance of sugars, amino acids, fatty acids and glycerol in the synthesis and breakdown of carbohydrates, lipids and proteins
	I can describe DNA as a polymer made up of two strands forming a double helix

Matter	
	I can use ideas about energy transfers and the relative strength of chemical bonds and intermolecular forces to explain the different temperatures at which changes of state occur
	I can explain chemical bonding in terms of electrostatic forces and the transfer or sharing of electrons
	I can construct dot and cross diagrams for simple ionic and covalent substances
	I can represent three dimensional shapes in two dimensions and vice versa when looking at chemical structures e.g. allotropes of carbon

Energy	
	I can describe with examples where there are energy transfers in a system, that there is no net change to the total energy of a closed system (qualitative only)
	I can describe, with examples, how in all system changes, energy is dissipated, so that it is stored in less useful ways
	I can describe how heating a system will change the energy stored within the system and raise its temperature or produce changes of state
	I can define the term specific heat capacity and distinguish between it and the term specific latent heat

Diagrams are integral to learning A level Biology. Much of what we will be learning about cannot be seen or held. Your notes will contain many of **your own** diagrams, neatly drawn and coloured and (importantly) large, so we would ask you to include diagrams in the preparatory task notes too. In particular we would like you to:

- Draw a cell **in as much detail as you can**, fully annotated (annotations are labels with descriptions). This will require you to do some online research.
- Use a dot & cross diagram to show the electron configuration of **glucose** (in its ring form). We want you to do this by **applying** your knowledge. Do it rough first, while you figure it out, then draw it neatly once you're happy with it. You might need to elongate the shells to ellipses to make it work.

The biggest difference between examination at GCSE and at A level is that GCSE exam questions test what you have learnt, whereas A level exam questions test whether you can **use** what you have learnt, often to do something you have not done before. This is called **applying your knowledge**.

The idea is that completing these tasks will reconnect you to your **student** self, and help you take a first step towards developing the study skills that will prove invaluable over the coming years. Take pride in your work - this preparatory work is the first step that takes you further than everyone else; a step that takes you **beyond** compulsory education, a step that takes you down the path towards being an **expert**.