ETONBURY ACADEMY

BTEC Applied Science

Summer Bridging Work

BTEC Applied Science

Applied science is a great subject to study if you enjoy science, want to learn about things relevant to real life and want a qualification that opens up many doors! The course is a good mix of biology, chemistry and physics topics, with a range of practical work that is written up as coursework. It is also a route into studying science in the future if you fall short of the entry requirements to do A Level science subjects.

What are the main differences between GCSE and BTEC Applied Science?

Although there is much overlap in topics and terms, there is quite a lot of new material that you won't have met before. Also, you need to go into more detail regarding the topics you are already familiar with and your level of thinking and explaining has to be deeper.

New material

There will be many more facts and unfamiliar terms to learn and recall in exams than there were at GCSE. Examples of new areas include the structure of cell membranes and biological molecules in biology, ionisation energy and reactions of chemical importance in chemistry, and optical fibres and how waves are used in communication in physics. Don't be put off by all the complex terms you will start to come across, they are important for scientists to communicate precisely what they mean, and as your course progresses you will become more comfortable and confident with using them.

Coursework

In GCSE science, all assessment was by exam at the end of year 11. In BTEC applied science, you will have 3 externally assessed exams (2 in year 12 and 1 in year 13), and 2 coursework based units (spread out over the two year programme) that are internally assessed and moderated, then checked by external verifiers. In year 12, your coursework assignments will be interspersed with the theory you are learning for exams meaning you may have theory heavy lessons one week, then coursework preparation the next. But don't worry, the curriculum has been sequenced carefully, ensuring the topics flow into one another and you can see how the coursework relates to the rest of your learning.

Examination papers

As this is a relatively new course, there isn't a wealth of past papers available. However, the old applied science exam papers are still very relevant and we will plan to sit all these and any available papers for this course in good time for your exams. Exam papers are created by the awarding body very carefully to test your knowledge and understanding of the specification. It is important to complete any papers your teacher sets you prior to your exams, and complete as many as you can independently to ensure you are fully prepared.

The Pearson website (https://qualifications.pearson.com/en/qualifications/btec-nationals/applied-science-aaq.html) has the specification and sample mark schemes/examiners' comments.

Subject content for the course can be found here:
https://qualifications.pearson.com/content/dam/pdf/btec-aaqs/applied-science/2025/specification-and-sample-assessments/btec-national-in-applied-science-specification.pdf

Course prerequisite
In order to ensure you have the required work ethos necessary to succeed on the BTEC applied science course, you must complete the tasks below and bring your completed answers to the first lesson in September. This work will support some of the topics covered early in year 12.
PLEASE NOTE: Keeping a note of the website you use and making a bibliography is VERY important in this course. For each of tasks 2-4, make a bibliography of your references.

Task 1 – About the BTEC course

Go to the exam board website (linked earlier in this booklet) and find out about the course you will be studying.

1. What are the different modules in the course?

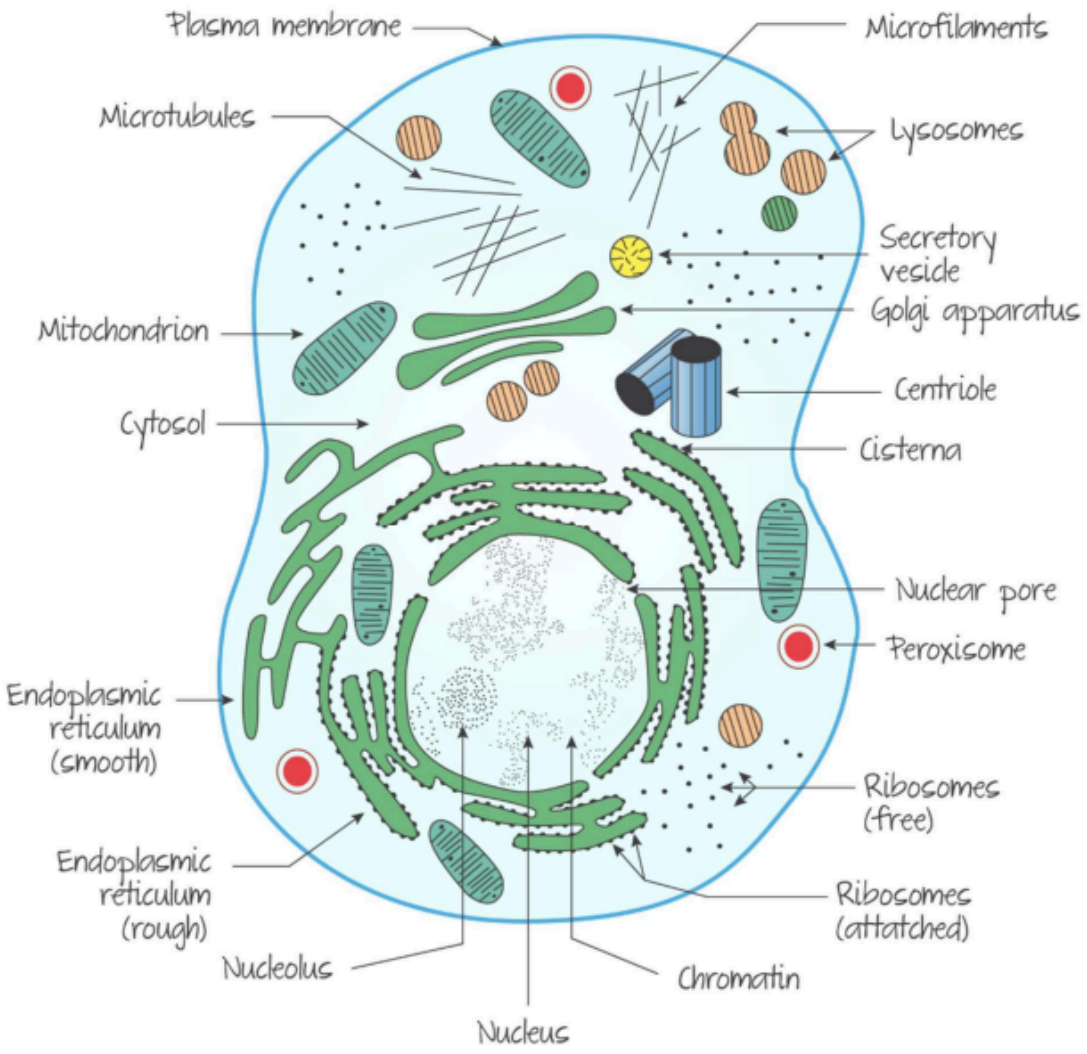
2. Looking at the content overview of each module, which topics are you most excited to learn about?

3. Which topics are you most nervous about?

4. How many exams will you sit over the 2 year course and what percentage of your grade are they worth?

Task 2 - Cell Ultra Structure

The Diagram below shows the Ultra structure of a Eukaryotic cell. You will need to learn the labels.

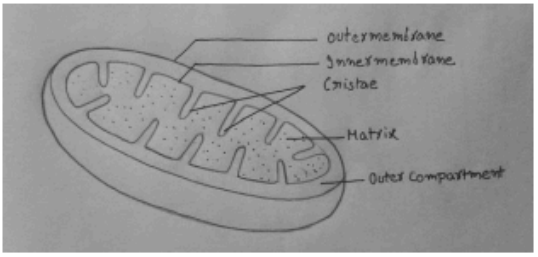


Construct a table for each of the organelles listed below, showing the structure of the organelle (draw and label a diagram) and the function of the organelle (1 or 2 bullet points)

- plasma membrane
- cytoplasm
- nucleus
- nucleolus
- endoplasmic reticulum (smooth and rough)
- Golgi apparatus
- vesicles

- lysosomes
- 80S ribosomes
- mitochondria
- centrioles
- cilia

For Example

Organelle	Structure	Function
Mitochondria	Draw a picture 	Site of Aerobic respiration. Production of ATP

Task 3 – Sampling techniques

1. Research the difference between sampling using a quadrat and sampling using a transect. Explain the differences in the methods used and the differences in when you would choose each approach.
2. Research the limitations of quadrat sampling and transect sampling.
3. Research how to make quadrat sampling “random” and explain why this is important.
4. Design an experiment where you use a quadrat to sample a lit area Vs a shaded area. Make sure to include:
   - A hypothesis
   - A risk assessment
   - A method
   - The independent, dependent and control variables.

Task 4 – Optical Fibres

1. Research and make a list of the different uses of optical fibres in life.
2. Research how an optical fibre works in terms of total internal reflection.
2. Research and write a description of how an endoscope works to visualise organs like the stomach. Include a diagram in your work.