BTEC Science Student Handbook

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Welcome to BTEC Science!

Welcome to The **Level 3 National Extended Certificate in Science** over the next two years. The course is an alternative vocational A-level equivalent. It includes topics on all 3 areas of Science: Biology, Chemistry and Physics.

The qualification carries UCAS points and is recognised by HE providers contributing to admission requirements for many courses.

Assessment Approach

There are three mandatory units for the Extended Certificate:

- Unit 1 is externally set and examined (June /January)
- Unit 2 is internally set and assessed via assignments
- Unit 3 is externally set and assessed (April/January)

- One optional unit 8 is internally set and assessed via assignments

You are required to take responsibility for your own learning and achievement, taking into account industry standards for behaviour and performance.

Assessment Procedure

When you are given an assignment, you will be asked to complete the 'Assignment Brief.' This will have all of your details on it and will also contain the task and scenario of the assignment. On the brief, there will also be the hand in date. This is the deadline for you to hand your work in. If this deadline is met, your assignment will be marked and handed back to you.
You will be able to see what grade you achieved and there will be a brief comment about your assignment. If you have not fully met the success criteria you may be offered the opportunity to resubmit your work. This is dependent on you attitude towards learning and attendance to lessons.

Grading

Every assessment will give you the opportunity to target all appropriate criteria. In order to achieve a Merit, you must obtain all marks at pass and merit level. To achieve a Distinction, you must meet all criteria in the Assessment criteria.

Obtaining a Pass

To obtain a pass, you must be able to show evidence that you understand the key facts relating to a topic.

Complete	To complete a form, diagram or drawing
Demonstrate	To show that you can do a particular activity
Describe	Give a clear, straightforward description which includes all the main points required.
Identify	Give all basic facts which relate to a certain topic
List	Write a list of main items
Name	State the proper terms related to a drawing or diagram
Outline	Give all points but without going into too much detail
State	Point out the main features
Examples	Use sporting examples to back up your work

Obtaining a Merit

To obtain a merit you must be able to show that in addition to meeting the Pass criteria, you can also use your knowledge to show you can do the following:

Comment on	Give your own opinions or views
Compare/contrast	Identify the main factors relating to two or more items and point out the similarities and differences
Competently use	Take full account of information and feedback you have obtained to review or improve an activity
Demonstrate	Prove that you can carry out a more complex activity
Describe	Give a full description including details of all relevant features
Explain	Give logical reasons to support your views
Justify	Give reasons for the points you are making so that the reader knows what you are thinking
Suggest	Give your own ideas and thoughts
Examples	Use sporting examples in your work

Obtaining a Distinction

To obtain a distinction, you must be able to show that in addition to meeting the Pass and Merit grades, you can also apply your knowledge to a situation and give a reasoned opinion.

Analyse	Identify several relevant factors, show how they are linked and explain the importance of each
Compare… Contrast…	Identify the main factors relaying to two or more situations and explain the similarities and differences and in some cases say which is best and why
Demonstrate	Prove that you can carry out a complex activity taking into account information you have obtained or received to adapt your original ideas.
Describe	Give a comprehensive description including details of all the relevant feature and shows that you can apply your knowledge and information correctly
Explain	Provide full details and reasons to support the arguments you are making
Justify	Give full reasons or evidence to support your opinions
Recommend	Weigh up all the evidence to come to a conclusion, with reasons, about what would be best.
Examples	Use examples to compare and contrast performance, behaviour and leadership skills.

Entry Requirements

You will be expected to have a standard of literacy and numeracy at a minimum of grade 5 and able to achieve a general education equivalent to five GCSE's at grade 5.

What we expect from you

- You to have the ability to work independently and organise your own study time
- An ability to meet deadlines
- Consistent punctuality and attendance to ALL lessons
- You to be able to develop problem solving skills
- The ability to develop excellent knowledge of a range of Sport specific situations
- Be able to work as a member of a team as well as independently

Plagiarism

We have strict rules in place about the copying of others' work. This includes work you find in books and on the internet. You must always state where you get information from – it is okay to use it as long as you say where you found it.

Wikipedia is strictly banned in assignments, as the information can sometimes be largely inaccurate.

If you do not reference where your work is from it could lead to you having to do the entire assignment again in your own time.

You should acknowledge your references through the use of a bibliography.

Personal Learning and Thinking Skills (PLTS)

Throughout your BTEC studies there are lots of opportunities to develop your ***personal learning and thinking skills*** which are looked for by employers.

IE – Independent Enquirers

CT – Creative Thinkers

RL – Reflective Learners

TW – Team Workers

SM – Self Managers

EP – Effective Participators

Throughout your BTEC Course you will also be developing and applying your knowledge of functional skills in ICT, English and Numeracy.

Summer work for BTEC

1. A young athlete is very good at long-distance running but is not good at sprinting.
   Discuss how this difference relates to the types of muscle fibres in his legs. **6 marks**

2. Titanium is a metal that has many useful properties. However, it is used only in small quantities for specialised purposes such as the making of hip replacement joints. This is because the extraction of titanium from titanium oxide. TiO_2, is expensive. The industrial process to extract titanium involves the following reactions:

   $TiO_2\,(s) + 2CL_2\,(g) + C(s) \rightarrow TiCl_4\,(g) + CO_2\,(g)$
   $TiCl_4\,(g) + 2Mg\,(l) \rightarrow Ti(s) = 2MgCl_2\,(s)$

   Explain why this process is so expensive **6 marks**

3.

Metal Specific heat	Metal specific heat	Metal specific heat	Metal specific heat	Metal specific heat
Aluminium	897	2700	660	1.4
Copper	385	8900	1084	11.5
Cast Iron	449	7850	1149	1.4

Using the information from the table, comment on which metal is most suitable for making a saucepan. **6 marks**

4.

Effect of substrate concentration on enzyme activity.

Hydrogen peroxide is a waste substance produced in cells. Hydrogen peroxide is harmful in high concentrations, so cells must decompose it quickly. Catalase is an enzyme found in living organisms and helps to decompose hydrogen peroxide into water and oxygen.
You have been asked to write a plan for an investigation into the effect of different concentrations of hydrogen peroxide solution on the rate of catalase activity. **12 marks**

5. Alveolar tissue is found in the lungs.

Endothelial tissue is found in the blood vessels.

(a) State the type of epithelial tissue found in both alveolar and endothelial tissue. (1)

.....

(b) State the function of the endothelial tissue in an artery.

(1)

.....

(c) Describe how a build-up of cholesterol in artery walls is a risk factor in the development of atherosclerosis. (4)

6. A home cinema system can be controlled either by an infrared remote control or a remote control that uses a Bluetooth© connection.

Evaluate the strengths and weaknesses of using:

- an infrared remote control
- a Bluetooth© remote control to control the home cinema system.

(6)