

# Magna Academy Poole

## Summer Preparation Task

### Applied Science



#### Why study Applied Science at Magna?

Employers are looking for recruits with a thorough grounding in the latest industry requirements and work-ready skills such as teamwork. Higher education needs students who have experience of research, extended writing and meeting deadlines. You will have to choose and complete a range of units, be organised, take some assessments and keep a portfolio of your assignments.

#### Purpose of task:

Your BTEC National Extended Certificate will be a mixture of all three sciences; Biology, Chemistry and Physics. You will complete exams and coursework in all three of these.

These tasks are designed to familiarise you with the research-based nature of completing an assignment. They will also introduce you the level of independence you will now need to start working with.

#### Tasks:

##### Referencing Task

For all tasks you need to produce a "Reference List". This will include a list of the books and websites and any other resources you used to help you. There will be times when you are required to correctly reference sources of information you use as part of your course.

We often use Harvard Style Referencing.

The following link will take you to a website that shows you how to reference books, webpages, web video clips and journals. There are also some interactive quizzes to help you <http://sixthformstudyskills.ncl.ac.uk/referencing/>

##### Task 1 - Cells (BIOLOGY)

Produce a one page revision guide to share with your class in September summarising one of the following areas: "Cells and Cell Ultrastructure" or "Prokaryotes and Eukaryotes"

Whichever topic you choose, your revision guide should include:

- Key words and definitions
- Clearly labelled diagrams
- Short explanations of key ideas or processes.

##### Task 2 - Creating alcohol (CHEMISTRY)

Research the two different methods of producing ethanol. Outline the key production steps, uses of both and the advantages and disadvantages of using either method.

##### Task 3 – Fibre Optics (PHYSICS)

Research how optical fibres work. Write an overview, including the physics behind how the light travels in optical fibres and what materials are used and why.

#### Recommended resources:

**These resources are just to get you started, you should be able to find your own.**

##### Task 1 - Cells

Visit these websites and read the information:

<http://www.s-cool.co.uk/a-level/biology/cells-and-organelles>

<https://pmt.physicsandmathstutor.com/download/Biology/A-level/Notes/AQA/2-Cells/Summary%20Notes.pdf>

Watch these videos:

<https://www.youtube.com/watch?v=cj8dDTHGJBY>

<https://www.youtube.com/watch?v=Pxujitlv8wc>

##### Task 2 - Alcohols

<http://passmyexams.co.uk/GCSE/chemistry/producing-ethanol-by-fermentation.html>

[https://www.youtube.com/watch?v=YbdkbCU20\\_M](https://www.youtube.com/watch?v=YbdkbCU20_M)

##### Task 3 – Fibre Optics

<https://searchnetworking.techtarget.com/definition/fiber-optics-optical-fiber>

##### Referencing Task

[https://www.uhi.ac.uk/en/t4-media/one-web/university/library/how-to/UHI-mini-Student-referencing-guide-en-N\\_A.PDF](https://www.uhi.ac.uk/en/t4-media/one-web/university/library/how-to/UHI-mini-Student-referencing-guide-en-N_A.PDF) (page 3)

**Deadline for Task:** First lesson in the week commencing 7<sup>th</sup> September 2020

## Recommended reading & activities list:

### Course resources

Here is the specification which provides all of the details of the level 3 Applied Science Certificate.

[https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938157\\_BTECNat\\_AppSci\\_Cert\\_Spec.pdf](https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Applied-Science/2016/specification-and-sample-assessments/9781446938157_BTECNat_AppSci_Cert_Spec.pdf)

### Careers in Science

The fundamental knowledge, practical skills, transferable skills – for example, organisation, self-assessment and problem-solving, and the ability to interpret data – are all developed in this unit. You will gain confidence when you undertake the more complex practical techniques involved in higher education science courses such as biochemistry, chemistry, forensic science and environmental science.

The experience you gain will be invaluable in careers requiring a scientific background. Employers in many Science - related industries will appreciate your ability to follow written scientific procedures and your desire to ensure accuracy by using techniques correctly and by checking that equipment – for example, pipettes, balances, pH meters and thermometers – is calibrated correctly and that appropriate standard calibration documentation has been completed.

You may or may not already know what your future career path may be, but please follow the links below which introduce you to science-related careers.

<https://www.rsb.org.uk/careers-and-cpd/careers/career-resources/resources-for-students>

<https://www.healthcareers.nhs.uk/ps://www.rsb.org.uk/careers-and-cpd/careers/apprenticeships>

<https://www.healthcareers.nhs.uk/>

### Science in the News

Keeping up-to-date with Science in the news will help you link your studies to everyday phenomena.

[https://www.bbc.co.uk/news/science\\_and\\_environment](https://www.bbc.co.uk/news/science_and_environment)

<https://www.theguardian.com/science>

### Scientific Publications

The following publications will help put the Science you are learning about into context.

<https://www.sciencefocus.com/>

<https://www.stem.org.uk/big-picture>

### Video Links

YouTube has thousands of Science videos. Just be careful to look at who produced the video and why because some videos distort the facts. Here are some recommended video links:

[https://www.youtube.com/watch?v=6yEX\\_OI0xbQ&list=PLg7f-TkW11iX-hEe9JczgXEy2Foc7Siut&index=3&t=0s](https://www.youtube.com/watch?v=6yEX_OI0xbQ&list=PLg7f-TkW11iX-hEe9JczgXEy2Foc7Siut&index=3&t=0s)

<https://www.youtube.com/watch?v=VBxgRXw8heg>

### Required stationary and equipment

A4 folders/ring-binders with dividers  
Lined paper  
Plastic wallets  
Scientific calculator (same as you used at GCSE)  
30cm ruler

### Essential resources (things to bring with you every lesson)

Textbook(s) - you will be issued with these when you start the course.  
Lab books - bring these to all your practical lessons.  
Homework which is due in.

### Things to consider

There is a significant maths requirement in Applied Science. It is important you learn and practice using the key equations that will be given to you, in order to use them in the exams.

Keep your work organised from the moment you start the course. Make sure you divide your folders up into the different topics you will learn about. This will save you a lot of time when you come to revise for topic tests or mock exams. You will suddenly feel like you have a lot of free time. You will need to plan your time well, have high levels of self-motivation and self-discipline. Any free lessons should be spent completing assignments.