**Chemistry Course Introduction**

**Dear Chemists**

**In this booklet I have explained the content of the course and what you will be expected to do during your A level.**

**Read through to make sure you are still happy to take on this course. Keep this information for using when you start the course.**

**Read through the tasks. Those to be completed for the start of term are in red and also summarised in this table.**

|  |  |  |  |
| --- | --- | --- | --- |
| Title of Tasks | Purpose of Task: | Time to be taken | Outcome Expected |
| Task 1: Research project | *To learn about the theories and ideas involved in the development of an atom’s structure* | 4 hours | Choose 1 of the 2 topics to research and produce three A4 pages with images and bibliography |
| Useful websites | <https://www.bbc.co.uk/bitesize/subjects/zs6hvcw>  <https://www.chemguide.co.uk/> | | |

A-level Chemistry is set into 6 modules some of which you will have partially covered at GCSE. Especially Foundations in Chemistry, Periodic Table and energy, and Core Organic Chemistry. I would like you to complete 3 pieces of work which will be collected in during your first week of year 12.

1. **PAG 12 Research Project**

**Introduction**

During your 2 year course you will complete your Practical Endorsement, this is a set of scientific skills that you are required to pass. The skills assessed are independent thinking, use and application of scientific methods and practices, Research and referencing and Instruments and equipment. You will have numerous opportunities to pass these skills throughout the course. This piece of work is intended to use the skills of researching and referencing information from books, journals and the internet. The topic chosen should link to one of the areas being studied in chemistry at A level.

Choose **one topic** to research, you have a range of topics to choose from. Please read below.

**Aim**

To write a suitable report on a chosen area of A Level Chemistry, demonstrating appropriate level research skills, using information from books, journals and the internet along with **correct referencing** of any sources of information used.

1. **Looking for patterns in Chemistry:**

*The theories and ideas involved in the development of an atom’s structure gives a fascinating insight into how science works. This scientific method is often represented as the sequence of experiments, observation, analysis and conclusion. The model of the nuclear atom – consisting of protons, neutrons and electrons- is extremely useful and allows us to explain chemical bonding, as well as to understand the pattern of the periodic table. The nuclear atom is well accepted by the chemists and is firmly based on sound experimental evidence. It is amazing to think that these experiments all began with the investigating particle that cannot every been seen.*

*However, science doesn’t always advance. The nuclear model of the atom has now been replaced, and further models will also be replaced as science advances further. We have come a long way from the four elements of the ancient Greeks.*

1. Describe how the model of the atom has changed over the years and how it continues to do so?
2. How is scientific knowledge evolving?
3. Describe how new theories are accepted by the scientists?

**Include the work of the following:**

1. Greek Philosophers and the first idea of atoms and elements
2. John Dalton
3. Joseph John Thomson
4. Ernest Rutherford
5. Neils Bohr
6. And many more
7. **The Periodic Table**

*The Periodic Table is the single most important reference document for the chemist. Scientists have attempted to organise the elements in some sort of logical order for centuries. It was only in the nineteenth century that the first recognised Periodic Table was pieced together by comparing the properties of different elements. Since then, the Periodic Table has helped generations of chemists – and chemistry students – to understand the complex relationships between the elements.*

1. Describe early attempts to order the elements.
2. How are advances in scientific knowledge accepted?
3. Explain the importance of the work of Mendeleev and other scientists in developing the modern Periodic Table.

**Include the work of the following**

1. Dimitri Mendeleev
2. Antoine-Laurent Lavoisier
3. Jöns Jakob Berzelius
4. Johann Wolfgang Döbereiner
5. Alexandre-Emile Bėguyer de Chancourtois
6. John Newlands

**Other suggested titles are:**

* **Chemistry in Climate**
* **The Future of Plastic**
* **Equilibrium and Industry**
* **Development of drugs e.g. coronavirus vaccine.**

**Procedure**

* **Identify a topic.**
* **Research your chosen topic identifying new knowledge and understanding going beyond what is taught in the physics classroom.**
* **Produce a written report of approximately three A4 pages.**
* **You should include information taken from suitable resources, and you must properly cite the sources of information that you have used.**
* **Present the information in class in an appropriate professional manner.**

**To submit**

* **For this piece of work to count towards a Practical Activity of the GCE Chemistry Practical Endorsement you should have a written report to discuss with your teacher.**
* **You should have also have maintained contemporaneous notes of your research and the sources used.**