





The curriculum for this stage of students' education has been designed to provide a more practical, real-world approach to learning alongside a clearly explained and structured theoretical background. This will help to develop the knowledge, understanding and skills that underpins progression in the science industry. Students are engaged in carrying out practical work, following standard procedures and methods in the correct way to carry out techniques and discussing the quality of results and presenting findings during almost every teaching session.

<p><b>HALF TERM 1</b> Unit 1 Principles and Applications of Science</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Topic A Chemistry: Periodicity and properties of elements. Understanding structure and bonding in applications in science. Production and uses of substances in relation to properties.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> 90-minute written exam worth 90 marks. The paper is split into three sections, and each section (biology, chemistry and physics) is worth 30 marks.</p>	<p><b>HALF TERM 2</b> Unit 1 Principles and Applications of Science</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Topic B Biology: Structure and function of cells and tissues. Understanding cell structure and function, specialised cells, tissue structure and function.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> 90-minute written exam worth 90 marks. The paper is split into three sections, and each section (biology, chemistry and physics) is worth 30 marks.</p>	<p><b>HALF TERM 3</b> Unit 1 Principles and Applications of Science</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Topic C Physics: Waves and communication. Working with waves, understanding waves in communication and use of electromagnetic waves in communication.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> 90-minute written exam worth 90 marks. The paper is split into three sections, and each section (biology, chemistry and physics) is worth 30 marks.</p>
<p><b>HALF TERM 4</b> Unit 2 Practical Scientific Procedures and Techniques</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Learning aim A: Undertake titration and colorimetry to determine the concentration of solutions. Accurate measurement of mass and volume, to carry out acid-base titrations and colorimetry</li> <li>Learning aim B: Undertake calorimetry to study cooling curves by measuring cooling curves as accurately as possible. Constructing and interpreting a cooling curve to investigate how to collect and analyse data in the most reliable way. Using a basic and safe method of heating a solid to a temperature above its melting point to gather temperature data as a function of time.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> The unit will be assessed using four assignments, one per learning aim. Learning aims A, B and C involve practical work. Observation reports for the learners, or types of evidence that shows the learners undertaking the practical assessments.</p>	<p><b>HALF TERM 5</b> Unit 2 Practical Scientific Procedures and Techniques</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Learning aim C: Undertake chromatographic techniques to identify components in mixtures. By preparing a dark, concentrated extract of pigment from fresh leaves or from dried herbs by grinding with sand, extraction with a suitable solvent, filtration and concentration by evaporation. Carrying out paper chromatography and thin layer chromatography (TLC) of plant pigments.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> The unit will be assessed using four assignments, one per learning aim. Learning aims A, B and C involve practical work. Observation reports for the learners, or types of evidence that shows the learners undertaking the practical assessments.</p>	<p><b>HALF TERM 6</b> Unit 2 Practical Scientific Procedures and Techniques</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Learning aim D: Review personal development of scientific skills for laboratory work based on the work from the other three learning aims. From the start of the practical programme, a diary or a log of the skills used in each practical session is kept, including those that are associated with assignments. The skills may be practical skills (e.g. the ability to weigh accurately) or interpretative (e.g. the ability to draw an accurate tangent to a cooling curve), or the personal competences identified in the unit content (e.g. communication or the ability to recognise problems and apply appropriate scientific methods to identify causes and achieve solutions).</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> The assignment for learning aim D, requires access to the skills diary/logbook and to the assignments for learning aims A, B and C.</p>

**Embedding this knowledge can be supported at home by reviewing class notes, guided learning wider reading, exam practice questions, independent research and study, completing set independent study tasks, watching scientific documentaries and understanding current issues in the scientific world.**