

Syllabus – Laboratory Biology

Didactic Principles

The general **aim** of this course is to develop the **skills, knowledge** and **understanding** to carry out experiments, research and practical investigations. This will emphasise the principles and practice of investigative science and its communication. Learners will do this through investigation of scientific method, scientific literature and communication. Therefore, they will work with pilot studies, sampling, variables, experimental design including controls and reliability assurance. Evaluating background information, experimental design, data analysis and conclusions will focus on research and Scientific Ethics.

The collection of experimental data will provide an opportunity to develop planning and organising skills. Learners will research issues and apply scientific skills which will develop their scientific literacy.

The course covers the **key areas** of: scientific principles and process; experimentation; critical evaluation of scientific research.

Entry to this course is dependent upon the student following the corresponding four period biology course in years six and seven of secondary.

Learning Objectives

By the end of year seven pupils should be able to:

- Use scientific knowledge to analyse problems and apply it to new situations.
- Process and both, quantitatively and qualitatively, analyse scientific information/data from a variety of sources including scientific publications and media reports
- Plan and design biological experiments/investigations, using reference materials and including risk assessments, to test a hypothesis or to illustrate particular effects
- Identify potential hazards, assessing associated risks and applying appropriate control measures.
- Record detailed observations and collect data with precision and accuracy
- Produce, describe and analyse different kinds of graphs
- Draw valid conclusions and giving explanations supported by evidence/justification
- Critically evaluate experimental procedures by identifying sources of error, suggesting and implementing improvements
- Communicate clearly, using scientific vocabulary correctly. Demonstrate very good presentation skills.
- Work constructively in a team.
- Take account ethical considerations, as appropriate, in, for example, the use of living materials, human subjects and the conservation of natural habitats