

2026 Queensland Quantum Challenge - Curriculum Alignment to Australian Curriculum V9 – Biology (for Year 11)

The Biology Rationale is bolded where there is alignment to the 2026 Queensland Quantum Challenge. The Unit/Syllabus Objectives included provide connections to domains where applications of quantum and advanced technologies are being harnessed to solve problems.

Biology Rationale

Biology provides opportunities for students to engage with living systems. In Unit 1, students develop their understanding of cells and multicellular organisms. **In Unit 2, they engage with the concept of maintaining the internal environment.** In Unit 3, students study biodiversity and the interconnectedness of life. **This knowledge is linked in Unit 4 with the concepts of heredity and the continuity of life. Students will learn valuable skills required for the scientific investigation of questions. In addition, they will become citizens who are better informed about the world around them and who have the critical skills to evaluate and make evidence-based decisions about current scientific issues.**

Biology aims to develop students':

- sense of wonder and curiosity about life
- respect for all living things and the environment
- understanding of how biological systems interact and are interrelated, the flow of matter and energy through and between these systems, and the processes by which they persist and change
- understanding of major biological concepts, theories and models related to biological systems at all scales, from subcellular processes to ecosystem dynamics
- **appreciation of how biological knowledge has developed over time and continues to develop; how scientists use biology in a wide range of applications; and how biological knowledge influences society in local, regional and global contexts**
- ability to plan and carry out fieldwork, laboratory and other research investigations, including the collection and analysis of qualitative and quantitative data and the interpretation of evidence
- **ability to use sound, evidence-based arguments creatively and analytically when evaluating claims and applying biological knowledge**

- ability to communicate biological understanding, findings, arguments and conclusions using appropriate representations, modes and genres.

Senior Biology	
Unit / Syllabus Objectives	Subject Matter
Unit 2: Maintaining the internal environment	<p>Science as a human endeavour</p> <ul style="list-style-type: none"> • Appreciate that understanding natural systems can lead to advances in technology and engineering. For example, computer models of human thermoregulation responses, including heat transfer, perspiration, respiration and blood flows, have been developed for use in the design of clothing and environments that aim to protect humans from hyper- and hypothermia. • Appreciate that scientific advancement and the development of complex models often requires contribution from multiple individuals across a range of disciplines
Unit 4: Heredity and the continuity of life	<p>Science as a human endeavour</p> <ul style="list-style-type: none"> • Appreciate that ICTs such as genetic databases and The Basic Local Alignment Search Tool (BLAST) have allowed large-scale mapping and analysis of DNA and protein sequences. Technological developments in the fields of comparative genomics, comparative biochemistry and bioinformatics have enabled identification of further evidence for evolutionary relationships.