

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

The Physics 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.

### Physics Rationale

**Physics provides opportunities for students to engage with the classical and modern understandings of the universe.** In Unit 1, students learn about the fundamental concepts of thermodynamics, electricity and nuclear processes. In Unit 2, students learn about the concepts and theories that predict and describe the linear motion of objects. Further, they will explore how scientists explain some phenomena using an understanding of waves. In Unit 3, students engage with the concept of gravitational and electromagnetic fields, and the relevant forces associated with them. **Finally, in Unit 4, students study modern physics theories and models that, despite being counterintuitive, are fundamental to our understanding of many common observable phenomena. 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.**

Physics aims to develop students':

- **appreciation of the wonder of physics and the significant contribution physics has made to contemporary society**
  - understanding that diverse natural phenomena may be explained, analysed and predicted using concepts, models and theories that provide a reliable basis for action
- **understanding of the ways in which matter and energy interact in physical systems across a range of scales**
  - understanding of the ways in which models and theories are refined, and new models and theories are developed in physics; and how physics knowledge is used in a wide range of contexts and informs personal, local and global issues
- **investigative skills, including the design and conduct of investigations to explore phenomena and solve problems, the collection and analysis of qualitative and quantitative data, and the interpretation of evidence**

- ability to use accurate and precise measurement, valid and reliable evidence, and scepticism and intellectual rigour to evaluate claims
- ability to communicate physics understanding, findings, arguments and conclusions using appropriate representations, modes and genres.

<b>Senior Physics</b>	
<b>Unit / Syllabus Objectives</b>	<b>Subject Matter</b>
Unit 4: Revolutions in Modern Physics	Topic 2: Quantum Theory <ul style="list-style-type: none"> <li>• Describe how symmetry in particle interactions occurs to maintain the principles of conservation.</li> </ul>