

**Teacher(s):** Gary Rolfe, Christian Plischke, Emilee McFarlane, Eva Bugledich

**Faculty:** Science

**Unit Duration:** Semester 2, 2026

The **Australian Curriculum Achievement Standards in** In the practice of science, the 3 strands of Science *understanding*, *Science as a human endeavour* and *Science inquiry* are closely integrated; the work of scientists reflects the nature and development of science, seeks to respond to and influence society's needs, and is built around scientific inquiry. Students' experiences of science at school mirror and connect to this multifaceted view of science.

**Australian Curriculum Achievement Standard:** By the end of Year 9 students explain observable chemical processes in terms of changes in atomic structure, atomic rearrangement and mass. They explain how interactions within and between Earth's spheres affect the carbon cycle. Students explain the role of publication and peer review in the development of scientific knowledge and explain the relationship between science, technologies and engineering. They analyse the different ways in which science and society are interconnected.

Students plan and conduct safe, reproducible investigations to test or identify relationships and models. They describe how they have addressed any ethical and intercultural considerations when generating or using primary and secondary data. They select and use equipment to generate and record replicable data with precision. They select and construct appropriate representations to organise, process and summarise data and information. They analyse and connect data and information to identify and explain patterns, trends, relationships and anomalies. They construct logical arguments based on evidence to support conclusions and evaluate claims. They select and use content, language and text features effectively to achieve their purpose when communicating their ideas, findings and arguments to specific audiences.

**Unit Description:** In semester 2, students are introduced to the notion of the atom as a system of protons, electrons and neutrons. They learn that how the chemical arrangements change during chemical reactions and how to represent these as chemical equations, and that these changes play an important role in many systems. They explain how interactions within and between Earth's spheres affect the carbon cycle. They develop hypotheses for testing relationships between variables, and plan and conduct reproducible experiments. Students use models and choose appropriate representations for data to help them explain trends and relationships. They construct evidence-based arguments and use scientific language to communicate their ideas.

### Essential Learning Outcomes developed from the Achievement Standards of the Australian Curriculum:

1. **V9.S.9.04** - Analyse energy conservation in simple systems and apply wave and particle models to describe energy transfer. (*Physics*)
2. **V9.S.9.03** - Explains how interactions within and between Earth's spheres affect the carbon cycle (*Earth & Space*)
3. **V9.S.9.10** - Selects and uses equipment to generate and record replicable data with precision (*Planning and Conducting*)
4. **V9.S.9.11**- Select and construct appropriate representations to organise, process and summarise data and information. (*Analysing*)
5. **V9.S.9.13** - Analyse the impact of assumptions and sources of error in methods and evaluate the validity of conclusions and claims. (*Evaluating*)
6. **V9.S.9.14** - Construct logical arguments based on evidence to support conclusions and evaluate claims. (*Evaluating*)
7. **V9.S.9.15** - Selects and uses content, language, and text features effectively to achieve their purpose when communicating their ideas findings and arguments to specific audiences (*Communication*)

**Materials and Equipment Required:** Students are expected to arrive at every class with a class book/folder to write notes for that subject, a writing instrument and a Chromebook or similar, appropriate electronic device. Students may also be required to provide the following additional materials and equipment: *Scientific Calculator*

**Absences from Class:** Students who miss classes due to absence or excursions must use Google Classroom and Stileapp to catch up missed work, unless otherwise negotiated with the teacher.

**Use of IT in Class:** A Google Classroom and Stileapp.com class has been set up for this class. Students will be required to log into these accounts regularly to access course material. Students must bring a charged chromebook (not a phone) to all lessons, however, the use of these devices in class will be at the discretion of the teacher.

**Homework:** All students will be given multiple opportunities to demonstrate a proficiency level of 3 or above across all Essential Learnings during class time. Students may use time at home to complete additional enrichment and extension activities that demonstrate a proficiency above level 3, or to catch up on missed or unfinished classwork.

**Late Work:** Extensions may be negotiated with individual teachers before the due date.

**Plagiarism:** Plagiarism is copying or using another's work and claiming it as your own. This includes copying, cutting and pasting text or using ideas directly from a text, the internet or some other source without appropriate referencing. If this happens, work may not be graded and students will be asked to discuss the assessment with the classroom teacher and Executive Teacher for that subject. Parents may be contacted as part of this process.

**Assessment Portfolio:** This contains evidence of work from the opportunities the students have been provided to demonstrate elements of the achievement standard.

**Portfolio Assessment Tasks for this subject will include:**

|                                                                | Week / Date Due | Essential Learning |
|----------------------------------------------------------------|-----------------|--------------------|
| 1. Practical Investigation – Sound                             | Week 3          | 3, 4, 5, 6, 7      |
| 2. Test – Waves, Sound and Light                               | Week 8          | 1                  |
| 3. Practical Skills Test - Carbon Cycle                        | Week 14         | 3, 4, 5, 6, 7      |
| 4. Test- Global Systems                                        | Week 18         | 2                  |
| 5. Ongoing – In-Class Investigations and Formative Assessments | Ongoing         | All                |

**A-E Reporting Grade Descriptors** These are the grades and grade descriptors for reporting at the end of each Semester.

|          |                                                                                                                                                                |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A</b> | Demonstrating <b>excellent</b> achievement of what is expected (Consistently achieving a proficiency level of 4 or above in each of the Essential Learnings)   |
| <b>B</b> | Demonstrating a <b>high</b> achievement of what is expected (Consistently achieving a proficiency level of between 3 and 4 in each of the Essential Learnings) |
| <b>C</b> | Demonstrating <b>satisfactory</b> achievement of what is expected (Achieving a proficiency level of 3 across the Essential Learnings)                          |
| <b>D</b> | Demonstrating <b>partial</b> achievement of what is expected (Achieving a proficiency of between 1 and 3 across the Essential Learnings)                       |
| <b>E</b> | Demonstrating <b>limited</b> achievement of what is expected (Achieving a proficiency of 1 or less in each of the Essential Learnings)                         |

**S** **Status** is awarded where unavoidable circumstances have prevented assessment. Must be negotiated with the Principal.

#### Grade Descriptors and the "C" grade

In ACT public schools the Australian Curriculum Achievement Standard is aligned with a 'C' grade. The 'C' grade indicates that your child has demonstrated a satisfactory level of knowledge, understanding and skill in relation to the Achievement Standard.

#### Appeals

*A student must initiate an appeal for any grade with their subject teacher. If a student is dissatisfied with that initial process, they must pursue further appeal through the Faculty Executive Teacher for that subject.*

#### Executive Teacher

Gary Rolfe

21/07/2026