Science Stage 5 (Year 9 and 10)

Sample scope and sequence

# Rationale

All NSW public schools must plan curriculum and develop teaching programs consistent with the Education Act 1990 (NSW) and the NSW Education Standards Authority (NESA) syllabuses and credentialing requirements.

Scope and sequences form part of the ongoing documentation or evidence schools maintain to comply with the department’s policy, policy standards and registration requirements.

This resource has been developed to assist teachers in NSW Department of Education schools in creating learning contextualised to their classroom. The scope and sequence can be used as a basis for the teaching and learning programs and assessments, and as an example of implementing the new curriculum. The scope and sequence has suggested timeframes that might need to be adjusted by the teacher to meet the needs of their students and school context.

**Note:**

* The working scientifically skills listed in the scope and sequence are those identified in the focus area in the [Science 7–10 Syllabus](https://curriculum.nsw.edu.au/learning-areas/science/science-7-10-2023/overview). Additional working scientifically outcomes and content may be integrated into the learning.
* Data science 2 has been divided into 2 units of work. It illustrates one approach to dividing and distributing the content in the Data science 2 focus area. If schools prefer to integrate Data science 2 across multiple focus areas in Stage 5, all the outcomes in Data science 2 must be explicitly programmed and taught.
* Science faculties may include assessments in their scope and sequence based on their teaching and learning plans.
* This scope and sequence includes suggested placements for the Years 9 and Year 10 depth studies. These are indicative, and teachers have the flexibility to decide the timing of depth studies in their curriculum based on their students’ interests and learning needs.
* Where Life Skills outcomes are being integrated or taught concurrently, they should also be included in the scope and sequence.

# Science Year 9 – plan on a page

|  |  |
| --- | --- |
| Term | Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 Week 7 Week 8 Week 9 Week 10 |
| 1 | **Energy**  Outcomes: SC5-EGY-01, SC5-WS-01, SC5-WS-04, SC5-WS-07  Depth study: 5 hours |
| 2 | **Disease**  Outcomes: SC5-DIS-01, SC5-WS-06, SC5-WS-08 |
| 3 | **Materials**  Outcomes: SC5-MAT-01, SC5-WS-03, SC5-WS-07, SC5-WS-08 |
| 4 | **Environmental sustainability**  Outcomes: SC5-ENV-01, SC5-WS-06, SC5-WS-07 |

# Science Year 9 – scope and sequence

Table – Year 9 – scope and sequence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term and duration | Learning overview | Outcomes | Working scientifically | Additional information |
| **Term 1 Week 1 –Term1 Week 10** | **Energy**  In this unit, students will learn about:   * the law of conservation of energy * sources of energy * electrical energy * global future energy needs. | **SC5-EGY-01**  **SC5-WS-01**  **SC5-WS-04**  **SC5-WS-07** | In this unit, students develop skills in:   * selecting and using scientific tools for accurate observations * conducting investigations * problem solving. | Depth study (5 hours).  [insert assessment information here] |
| **Term 2 Week 1 –Term 2 Week 10** | **Disease**  In this unit, students will learn about:   * homeostasis * infectious and non-infectious diseases * disease control and prevention. | **SC5-DIS-01**  **SC5-WS-06**  **SC5-WS-08** | In this unit, students develop skills in:   * analysing data and information * communicating scientific arguments with evidence. | [insert assessment information here] |
| **Term 3 Week 1 –Term 3 Week 10** | **Materials**  In this unit, students will learn about:   * resources * bonding * chemistry of organic compounds * polymers. | **SC5-MAT-01**  **SC5-WS-03**  **SC5-WS-07**  **SC5-WS-08** | In this unit, students develop skills in:   * planning investigations * problem solving * communication. | [insert assessment information here] |
| **Term 4 Week 1 –Term 4 Week 10** | **Environmental sustainability**  In this unit, students will learn about:   * sustainability * climate science * impacts of present-day climate change * alternative resource use and recycling. | **SC5-ENV-01**  **SC5-WS-06**  **SC5-WS-07** | In this unit, students develop skills in:   * analysing data and information * problem solving. | [insert assessment information here] |

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# Science Year 10 – plan on a page

|  |  |  |
| --- | --- | --- |
| Term | Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 | Week 7 Week 8 Week 9 Week 10 |
| 1 | **Data science 2 – part A**  Outcomes: SC5-DA2-01, SC5-WS-06, SC5-WS-07, SC5-WS-08  Depth study: 5 hours | **Reactions**  Outcomes: SC5-RXN-01, SC5-RXN-02, SC5-WS-01, SC5-WS-02, SC5-WS-03, SC5-WS-04 |
| 2 | **Reactions**  Outcomes: SC5-RXN-01, SC5-RXN-02, SC5-WS-01, SC5-WS-02, SC5-WS-03, SC5-WS-04 | **Waves and motion**  Outcomes: SC5-WAM-01, SC5-WAM-02, SC5-WS-04, SC5-WS-05 |
| 3 | **Waves and motion**  Outcomes: **SC5-WAM-01, SC5-WAM-02, SC5-WS-04, SC5-WS-05** | **Genetics and evolutionary change**  Outcomes: **SC5-GEV-01, SC5-GEV-02, SC5-WS-05, SC5-WS-08** |
| 4 | **Genetics and evolutionary change**  Outcomes: **SC5-GEV-01, SC5-GEV-02, SC5-WS-05, SC5-WS-08** | **Data science – part B**  Outcomes: **SC5-DA2-01, SC5-WS-06, SC5-WS-07, SC5-WS-08** |

# Science Year 10 – scope and sequence

Table – Year 10 – scope and sequence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term and duration | Learning overview | Outcomes | Working scientifically | Additional information |
| **Term 1 Week 1 –Term 1 Week 6** | **Data science 2 – part A**  In this unit, students will learn about:   * investigating questions and claims * large data sets and scientific argumentation * Data science 2 in context. | **SC5-DA2-01**  **SC5-WS-06**  **SC5-WS-07**  **SC5-WS-08** | In this unit, students develop skills in:   * analysing data and information * problem-solving * communicating scientific arguments with evidence. | Depth study (5 hours)  [insert assessment information here] |
| **Term 1 Week 7 –Term 2 Week 6** | **Reactions**  In this unit, students will learn about:   * the law of conservation of mass * chemical reactions * the rate of chemical reactions * nuclear reactions. | **SC5-RXN-01**  **SC5-RXN-02**  **SC5-WS-01**  **SC5-WS-02**  **SC5-WS-03**  **SC5-WS-04** | In this unit, students develop skills in:   * observation * questioning and predicting * planning investigations. | [insert assessment information here] |
| **Term 2 Week 7 –Term 3 Week 6** | **Waves and motion**  In this unit, students will learn about:   * common properties of waves * sound waves * light waves * motion. | **SC5-WAM-01**  **SC5-WAM-02**  **SC5-WS-04**  **SC5-WS-05** | In this unit, students develop skills in:   * conducting investigations * processing data and information. | [insert assessment information here] |
| **Term 3 Week 7 –Term 4 Week 6** | **Genetics and evolutionary change**  In this unit, students will learn about:   * DNA structure and function * variation and inheritance * genetic technologies * the theory of evolution and evidence of natural selection. | **SC5-GEV-01**  **SC5-GEV-02**  **SC5-WS-05**  **SC5-WS-08** | In this unit, students develop skills in:   * processing data and information * communication. | [insert assessment information here] |
| **Term 4 Week 7 –Term 4 Week 10** | **Data science 2 – part B**  In this unit, students will learn about:   * pseudoscience. | **SC5-DA2-01**  **SC5-WS-06**  **SC5-WS-07**  **SC5-WS-08** | In this unit, students develop skills in:   * analysing data and information * problem-solving * communicating scientific arguments with evidence. | [insert assessment information here] |

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# Support and alignment

**Resource evaluation and support**: all curriculum resources are prepared through a rigorous process. Resources are periodically reviewed as part of our ongoing evaluation plan to ensure currency, relevance and effectiveness. For additional support or advice, or to provide feedback, contact the Science 7-12 Curriculum team by emailing [science7-12@det.nsw.edu.au](mailto:science7-12@det.nsw.edu.au)

**Differentiation:** further advice to support Aboriginal and Torres Strait Islander students, EALD students, students with a disability and/or additional needs and High Potential and gifted students can be found on the [Planning programming and assessing 7–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12) webpage. This includes the [Inclusion and differentiation 7–10 advice](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/inclusion-and-differentiation-advice-7-10) webpage.

**Assessment**: further advice to support formative assessment is available on the [Planning programming and assessing 7–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12) webpage. This includes the [Classroom assessment advice 7–10](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/classroom-assessment-advice-7-10-). For summative assessment tasks, the [assessment task advice 7–10](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/assessment-task-advice-7-10) webpage is available.

**Consulted with**: Curriculum and Reform and subject matter experts.

**Alignment to system priorities and/or needs**: [School Excellence Policy](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468).

**Alignment to the School Excellence Framework**: this resource supports the [School Excellence Framework](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468) elements of curriculum (curriculum provision) and effective classroom practice (lesson planning, explicit teaching).

**Alignment to Australian Professional Teaching Standards**: this resource supports teachers to address [Australian Professional Teaching Standard](https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/meeting-requirements/the-standards/proficient-teacher) 3.2.2.

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# Evidence base

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NESA holds the only official and up-to-date versions of the NSW Curriculum and syllabus documents. Please visit the NSW Education Standards Authority (NESA) website <https://educationstandards.nsw.edu.au/> and the NSW Curriculum website [https://curriculum.nsw.edu.au/home](https://curriculum.nsw.edu.au/).

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NESA (NSW Education Standards Authority) (2021) ‘[Advice on scope and sequences](https://www.educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/programming/advice-on-scope-and-sequences)’, Programming, NESA website, accessed 15 February 2024.

Wiliam D (2013) ‘[Assessment: The bridge between teaching and learning](https://www.researchgate.net/publication/258423377_Assessment_The_bridge_between_teaching_and_learning)’, Voices from the Middle, 21(2):15–20, accessed 15 February 2024.

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