

## Alignment with the Australian Curriculum: Science

This *Marvellous micro-organisms* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Year 6. This unit is designed to be taught in conjunction with other Year 6 units to cover the full range of the Australian Curriculum: Science content for Year 6.

For ease of assessment the table below outlines the sub-strands and their aligned lessons.

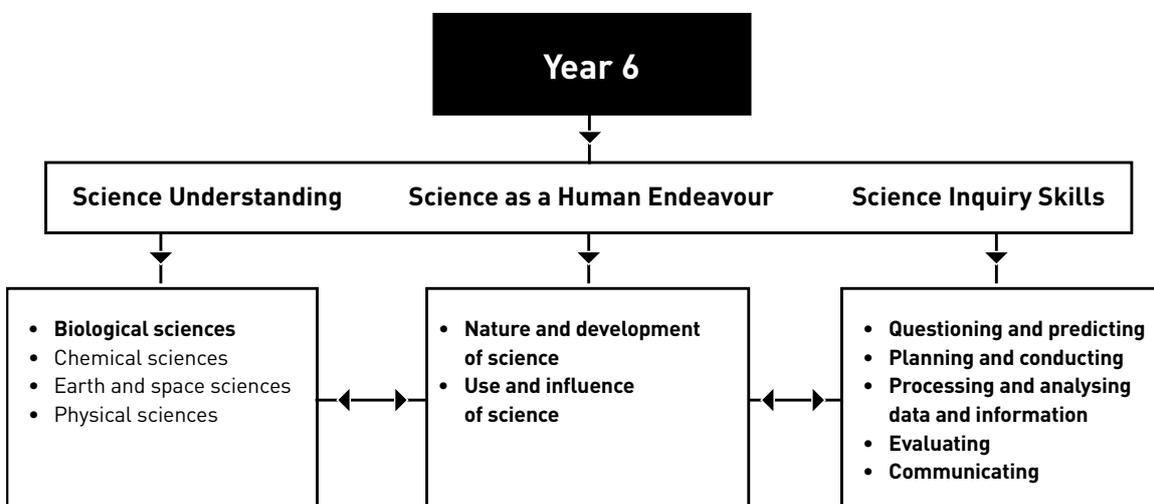
Strand	Sub-strand	Code	Year 6 content descriptions	Lessons
<b>Science Understanding (SU)</b>	<b>Biological sciences</b>	ACSSU094	The growth and survival of living things are affected by the physical conditions of their environment	1, 2, 3, 4, 5, 8
<b>Science as a Human Endeavour (SHE)</b>	<b>Nature and development of science</b>	ACSHE098	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	1, 3, 6
		ACSHE099	Important contributions to the advancement of science have been made by people from a range of cultures	1, 7, 8
	<b>Use and influence of science</b>	ACSHE100	Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives	1, 5, 7
		ACSHE220	Scientific knowledge is used to inform personal and community decisions	6

<b>Science Inquiry Skills (SIS)</b>	<b>Questioning and predicting</b>	AC SIS232	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be	2, 3, 6
	<b>Planning and conducting</b>	AC SIS103	With guidance, plan appropriate investigation methods to answer questions or solve problems	4, 3, 6
		AC SIS104	Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate	3, 6
		AC SIS105	Use equipment and materials safely, identifying potential risks	2, 3, 6
	<b>Processing and analysing data and information</b>	AC SIS107	Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate	3, 6
		AC SIS221	Compare data with predictions and use as evidence in developing explanations	3, 5, 6
	<b>Evaluating</b>	AC SIS108	Suggest improvements to the methods used to investigate a question or solve a problem	6
	<b>Communicating</b>	AC SIS110	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	1, 3, 5, 8

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### Interrelationship of the science strands

The interrelationship between the three strands—Science Understanding, Science as a Human Endeavour and Science Inquiry Skills—and their sub-strands is shown below. Sub-strands covered in this unit are in bold.



## Relationship to overarching ideas

In the Australian Curriculum: Science, six overarching ideas support the coherence and developmental sequence of science knowledge within and across year levels.

In *Marvellous micro-organisms*, these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Marvellous micro-organisms</i>
<b>Patterns, order and organisation</b>	Students identify micro-organisms as living things that grow and multiply in favourable conditions and identify patterns of growth through the collection and representation of data.
<b>Form and function</b>	Students explore how the microscopic form of micro-organisms helps them to break down and recycle dead plant and animal material. They discuss the function of micro-organisms in medicine and food production.
<b>Stability and change</b>	Students explore the growth of mould spores and investigate the conditions that encourage the growth of food mould.
<b>Scale and measurement</b>	Students explore living things on a microscopic scale, such as yeast, mould and bacteria.
<b>Matter and energy</b>	Students explore the role of yeast in making bread rise and the conditions needed for yeast to be active. They explain how yeast makes bread lighter by making a gas in the dough.
<b>Systems</b>	Students describe the relationship within a system by describing the role of yeast in the bread-making process by using a flow chart.

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## Curriculum focus

The Australian Curriculum: Science is described by year level, but provides advice across four year groupings on the nature of learners. Each group has a relevant curriculum focus.

Curriculum focus Years 3–6	Incorporation in <i>Marvellous micro-organisms</i>
<p><b>Recognising questions that can be investigated scientifically and investigating them</b></p>	<p>Students plan and conduct investigations of the conditions that affect the growth of yeast and mould. Students devise testable questions using dependent and independent variables.</p>

## Achievement standards

The achievement standards of the Australian Curriculum: Science indicate the quality of learning that students typically demonstrate by a particular point in their schooling, for example, at the end of a year level. These standards will be reviewed regularly by ACARA and are available from the ACARA website.

By the end of the unit, teachers will be able to make evidence-based judgments on whether the students are achieving below, at or above the Australian Curriculum: Science Year 6 achievement standard. Rubrics to help teachers make these judgments will be available on the website ([www.science.org.au/primaryconnections](http://www.science.org.au/primaryconnections)).

## General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the 21st century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities and they are embedded throughout the curriculum. For further information see: [www.australiancurriculum.edu.au](http://www.australiancurriculum.edu.au)

For examples of our unit-specific general capabilities information see the next page.

## Marvellous micro-organisms—Australian Curriculum general capabilities

General capabilities	Australian Curriculum description	<i>Marvellous micro-organisms</i> examples
<p><b>Literacy</b></p>	<p>Literacy knowledge specific to the study of science develops along with scientific understanding and skills.</p> <p>PrimaryConnections learning activities explicitly introduce literacy focuses and provide students with the opportunity to use them as they think about, reason and represent their understanding of science.</p>	<p>In <i>Marvellous micro-organisms</i> the literacy focuses are:</p> <ul style="list-style-type: none"> <li>• word wall</li> <li>• science journal</li> <li>• table</li> <li>• TWLH chart</li> <li>• flow chart</li> <li>• factual recount</li> <li>• procedural text</li> <li>• summary</li> <li>• labelled diagram</li> <li>• information report text.</li> </ul>
<p> <b>Numeracy</b></p>	<p>Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>• use measurement (quantity, time, temperature and area)</li> <li>• use measurement equipment appropriately (cup measures, teaspoon measure, thermometer, ruler and timer)</li> <li>• record accurate daily measurements</li> <li>• graph measurement results.</li> </ul>
<p><b>Information and communication technology (ICT) competence</b></p>	<p>ICT competence is particularly evident in Science Inquiry Skills. Students use digital technologies to investigate, create, communicate, and share ideas and results.</p>	<p>Students are given optional opportunities to:</p> <ul style="list-style-type: none"> <li>• use a digital microscope to view mould</li> <li>• use computer programs to design a flow chart</li> <li>• use the internet to find further information</li> <li>• use a digital camera to record findings.</li> </ul>
<p> <b>Critical and creative thinking</b></p>	<p>Students develop critical and creative thinking as they speculate and solve problems through investigations, make evidence-based decisions, and analyse and evaluate information sources to draw conclusions. They develop creative questions and suggest novel solutions.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>• use reasoning to develop questions for investigations</li> <li>• formulate, pose and respond to questions</li> <li>• consider different ways to think about living things that they cannot see</li> <li>• develop evidence-based claims about the growth of yeast and mould.</li> </ul>
<p><b>Ethical behaviour</b></p>	<p>Students develop ethical behaviour as they explore ethical principles and guidelines in gathering evidence and consider the ethical implications of their investigations on others and the environment.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>• ask questions respecting each other's point of view</li> </ul>
<p> <b>Personal and social competence</b></p>	<p>Students develop personal and social competence as they learn to work effectively in teams, develop collaborative methods of inquiry, work safely, and use their scientific knowledge to make informed choices.</p>	<p>Students:</p> <ul style="list-style-type: none"> <li>• work cooperatively in teams</li> <li>• participate in discussions</li> <li>• follow safety guidelines and suggest reasons for safety rules</li> <li>• use their understanding about the conditions for mould growth to consider food decay and its prevention.</li> </ul>

General capabilities	Australian Curriculum description	<i>Marvellous micro-organisms</i> examples
 <p><b>Intercultural understanding</b></p>	<p>Intercultural understanding is particularly evident in Science as a Human Endeavour. Students learn about the influence of people from a variety of cultures on the development of scientific understanding.</p>	<ul style="list-style-type: none"> <li>• ‘Cultural perspectives’ opportunities are highlighted where relevant.</li> <li>• Important contributions made to science by people from a range of cultures are highlighted where relevant.</li> </ul>

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