

# Preliminary Science Stage 4

LEVEL PRE	0 TCE CREDIT POINTS
COURSE CODE	PRS005419
COURSE SPAN	2019 — 2023
READING AND WRITING STANDARD	NO
MATHEMATICS STANDARD	NO
COMPUTERS AND INTERNET STANDARD	NO

This course is current for 2022.

## Preliminary Science caters for learners who require flexible and individualised programs

Learners will experience a range of learning activities in a familiar context that will assist them to attend to and explore the world around them with as much independence as possible.

### Introduction to Preliminary to Level 1 courses

This course has been accredited under Section 55ZI of the Office of Tasmanian Assessment, Standards and Certification Act 2003 - Other education. 'Other education' is defined by the Act as including 'education specifically designed for a person with a disability'.

Section 55ZM of the Act requires that providers of this course issue qualifications to learners who achieve a Preliminary Achievement (PA) award or higher at any stage or size value. For further information and examples, see the Supporting Documents section of this course.

In addition to provider-issued qualifications, course providers may report learner results to the Office of TASC in late November each year using prescribed methods. Reported results will be used by TASC for inclusion on students' Qualification Certificates (QCs) and may form part of the evidence base for a Tasmanian Certificate of Educational Achievement (TCEA) for eligible learners.

Achievement in courses Preliminary to Level 1 does not contribute to the Tasmanian Certificate of Education (TCE). This allows for greater flexibility in regard to learner movement between stages and their learning time (reflected in variable size values for this course) than are available in Level 1 and higher senior secondary courses.

### Learners

The Preliminary to Level 1 suite of courses are designed for learners whose circumstances significantly impact their learning – in an ongoing manner or for extended periods of time.

These learners include:

- learners with disability as defined by the Disability Discrimination Act (DDA) 1992, whose disability requires educational adjustments to support access and participation in learning
- learners whose circumstances have significantly impacted their ability to attend school for extended periods of time or engage in courses with higher levels of complexity
- learners who require significant support for learning English as an additional language or dialect.

## Rationale

*Preliminary Science* is one of a suite of courses designed to provide basic skills to learners with high needs, many of whom have a learning difficulty or disability. Some learners may need the full suite of courses for study in both years 11 and 12, some may need it for only part of their course load, and other learners may need only some courses in year 11 before moving to other programs for year 12.

The study of Science involves learners in observing, categorising and interpreting their world and the relationship they have with it through a process of inquiry.

*Preliminary Science* caters for learners who require flexible and individualised programs. Learners will experience a range of learning activities in a familiar context that will assist them to attend to and explore the world around them with as much independence as possible. Learning experiences in this course are designed to move learners from an emergent level of responding to a level where the response indicates intention.

*Preliminary Science* aims to offer better outcomes in all aspects of learners' lives, and assist learners' access to achievable pathways to further training and or employment outcomes.

## Aims

This *Preliminary Science* course aims to ensure that learners develop:

- an interest in science as a means of expanding their curiosity, and willingness to explore and ask questions about the world in which they live
- an understanding of the vision that science provides of the nature of living things, of the Earth, and of the physical and chemical processes that explain the behaviour of all material things
- an understanding of scientific inquiry, including: questioning; planning and conducting experiments and investigations; collecting, organising and interpreting data; reflecting on results; and drawing evidence-based conclusions
- an ability to communicate scientific understanding and findings to justify ideas on the basis of evidence
- an ability to solve simple problems and make informed, evidence-based decisions
- an understanding of science activities to explore their place in the world
- knowledge of the biological, chemical, physical, Earth and space sciences, including being able to select and integrate the scientific knowledge needed to explain and predict phenomena, and to apply that understanding.

## Learning Outcomes

On successful completion of this course, learners will be able to:

- identify properties and behaviour of some objects, living things and their environment
- find patterns in properties and behaviour of some objects, living things and their environment
- observe and interpret change in properties and behaviour of some objects, living things and their environment
- use tools and equipment for a simple task
- communicate ideas and observations about their environment, objects and living things
- act on instructions and monitor their own progress.

## Stages of Learning at Preliminary to Level 1

This course focuses on progressing learners from an emergent to early conventional level. It encourages learners to develop their independence as they explore, participate and engage in the world around them. Expectations for learner achievement are set at four stages which are not associated with age or year level that links chronological age to developmental progress. As learners progress through these stages the level of coactive support required decreases moving towards independence.

This document is **Stage 4** in four Stages of the course *Preliminary Science*.

### Stage 1

Within Stage 1 learners experience a range of learning activities that will assist them to attend to and explore the world around them with as much independence as possible. Experiences are designed for learners at an emergent level. Learners require high levels of coactive support and focused attention from the teacher to assist them to engage, react and participate. Learners demonstrate some awareness and recognition of familiar people and routine activities.

### Stage 2

Within Stage 2 learners are reliant on verbal and physical prompts to facilitate their learning. They begin to explore their world independently and engage in cause and effect learning activities. Learners are able to focus on structured learning activities for short periods of time. They respond to familiar people and events in a familiar environment and begin to use 'yes/no' responses.

### Stage 3

Within Stage 3 Learners display the first signs of independence, are less reliant on partial physical prompts and respond more consistently to verbal and visual prompts and clear directions from the teacher. Learners begin to interact with their peers in social opportunities. They participate in structured activities alongside their peers and use pictures, photos and objects to communicate personal interests and experiences. They begin to use and link some familiar words and images to form a meaningful communication.

### Stage 4

**Within Stage 4 learners participate cooperatively in group learning activities with indirect supervision and gestural prompts. They express their feelings, needs and choices in increasingly conventional ways and combine and sequence key words and images to communicate personal interests and to recount significant experiences. They indicate beginning understanding of social rules and expectations and are beginning to reflect on their own behaviour.**

## Access

Learners can enter the course at any of the four stages depending upon their level of readiness or ability. Providers will determine the entry point for learners based on each learner's level of readiness.

All learners have a right to an education that meets their needs through full participation and engagement with learning. Providers enhance the quality of all students' learning through responsive and planned learning programs that optimise achievement using inclusive practices.

Learners will have access to appropriate resources such as professional support staff; or adult assistance, and equipment such as assistive technology or modified facilities, as required. The Disability Standards for Education, 2005 outline the obligations that educational providers must meet in supporting the needs of learners with disability through reasonable adjustments.

Adjustments include a range of supports and accommodations including but not limited to:

- **supportive learning environments**
- tailored delivery models
- visual and organisational supports
- multimodal learning and assessment opportunities
- access to appropriate technology
- varying levels of prompting and adult assistance.

*'Adjustment' does not mean the lowering or removal of standards but rather it means allowing learners appropriate means to demonstrate their learning and achievement against standards.*

In the instance of online, distance or flexible delivery, adjustments may be made in the delivery of the courses by providers to suit the individual student's learning environment. This may involve differentiation to reflect the resources readily available to the learner within their home or community.

## Pathways

In addition to preparing and providing learners vital skills for personal independence this course prepares learners for a number of vocational pathways that utilise a knowledge of science. For example: Access to Vocational Pathways; Agriculture; Aquaculture; Automotive Vocational Preparation; Conservation and Land Management; Engineering; Horticulture; Hospitality; Introduction to Construction; and Sport and Recreation.

## Resource Requirements

Delivery of this course requires the tools, equipment, workspace(s) and associated facilities to meet the practical requirements of the course.

## Course Size And Complexity

This course has a complexity Preliminary to level 1.

Each stage of the course has a size value of 5 or 10 or 15 depending upon learners needs. A learner will undertake a minimum of 50 hours study in this course, through to a maximum of 150 hours dependent on learner needs.

There are many possible ways of combining the Stages of learning and the size value of 5 or 10 or 15 depending upon learners needs.

For example:

- A learner might study Preliminary to Level 1, Stage 3 of the course and complete it in 50 hours. This learner might then study Preliminary to Level 1, Stage 4 of the course and require 100 hours to achieve this. After successful completion, this learner might then undertake a Level 1 course in the following year.
- In one year a learner might study Preliminary to Level 1, Stage 2 of the course and complete it in 50 hours. This learner might then also study Preliminary to Level 1, Stage 3 of the course and require 100 hours to achieve this.
- A learner may study Preliminary to Level 1 Stage 1 in 150 hours.

## Course Description

This course is organised into four sequential stages. Each stage includes a learning focus statement and examples of student learning. Each stage is designed to accommodate a student's level of readiness and reflects their stage of development. It may be likely that a learner will engage in only one stage of learning in their study of this course.

The learning program focuses on ideas, skills, techniques and processes. It includes engagement in concepts that emerge from a range of starting points and stimuli.

This document represents **Stage 4** of the course *Preliminary Science*.

## Course Structure

This course is organised into four sequential stages. Learners can enter the course at any of the four stages depending upon their level of readiness or ability. Providers will determine the entry point for learners.

This document is **Stage 4** of the four stages in this course.

## Course Delivery

The sequence of delivery is at the discretion of the provider. A personalised learning program will be developed for each learner, dependent on their needs. Not all learners will achieve all stages of the course content.

## Course Content

: (50, 100 AND 150 HOURS)STAGE 4

This course has a size value of 5, 10 or 15.

In Stage 4, learners are building their independence to observe and share what they discover about the characteristics and properties of everyday objects, materials and living things. They explore change in the world around them, including changes that impact on them, for example the weather, and changes they can effect, for example making things move or change shape. They use their senses to gather information and learn that investigating objects, asking questions, seeking answers to questions and making observations are a core part of science. In Stage 4 learners must engage with all content in any order within the three strands of the *Australian Curriculum: Science*:

### Science as a human endeavour:

- science is about exploring the world around me
- I can use tools and equipment to observe and change the world around me.

### Science Understanding:

- biological sciences: living things can be plants or animals
- chemical sciences: objects can be sorted into groups based on their properties, and some objects can be mixed and changed
- Earth and space sciences: the changing properties of the weather over time will affect our choices
- physical sciences: the properties of objects will affect how they move.

### Science Inquiry Skills:

- questioning and predicting: ask and explore questions about familiar objects and events
- planning and conducting: observe, explore and manipulate familiar objects and events
- recording and processing: use pictures, words and provided simple graphic organisers to record observations and findings and sort objects into groups based on particular characteristics
- analysing and evaluating: use words to answer simple questions about observations and findings
- communicating: use both general terms and simple, scientific vocabulary to begin to describe their activities and observations.

## Assessment

Criterion-based assessment is a form of outcomes assessment that identifies the extent of learner achievement at an appropriate end-point of study. Although assessment – as part of the learning program – is continuous, much of it is formative, and is done to help learners identify what they need to do to attain the maximum benefit from their study of the course.

The standard of achievement each learner attains on each criterion is recorded as a rating of 'C' (satisfactory standard) according to the outcomes specified in the standards section of the course document.

A 't' notation must be used where a learner demonstrates any achievement against a criterion less than the standard specified for the 'C' rating. The 't' notation is not described in course standards.

A 'z' notation is to be used where a learner provides no evidence of achievement at all.

Internal assessment of all criteria will be made by the provider. Assessment processes must gather evidence that clearly shows the match between individual learner performance, the standards of the course and the learner's award.

### NOTATION ON EVIDENCE OF LEARNING

Some of the criteria standard elements use the terms reacting, responding and recognising.

In the context of this preliminary level course reacting/responding might be defined as:

- an intentional repeatable and observable behaviour that can be interpreted simply, objectively and conclusively.

In the context of this preliminary level course recognising might be defined as:

- intentionally signalling identification of (someone or something) through gesture, facial expression or sound from having encountered them before.

### **Quality Assurance Process**

Each provider is responsible for ensuring the integrity and validity of their assessment results against the requirements of the course, including standards, and for maintaining records and documentation that will demonstrate the integrity, accuracy and validity of the award decisions they make each year.

Under Section 55ZN of the Office of Tasmanian Assessment, Standards and Certification Act 2003, TASC may give a provider written direction regarding the provision and assessment of an accredited other education course.

### **Criteria**

The assessment of *Preliminary Science* Stage 4 will be based on whether the learner can:

1. identify and organise by properties and behaviour
2. use equipment and inquire into the world
3. complete tasks and communicate ideas and observations.

## Standards

### Criterion 1: identify and organise by properties and behaviour

The learner :

Rating C
labels and describes at least one familiar object, plant or animal
labels and describes at least one behaviour of a familiar object, plant or animal
labels and describes at least one property of their environment
sorts, or groups, and labels based on at least one property or behaviour of familiar objects, plants and animals
identifies at least one key characteristic of familiar objects, plants and animals
plans and acts appropriately in response at least one property of their environment.

### Criterion 2: use equipment and inquire into the world

The learner:

Rating C
communicates a sequence of observed changes to a property of plants, animals or objects
communicates a sequence of observed changes to a behaviour of living things or objects
communicates a sequence of observed changes to a property of their environment
predicts and communicates a sequence of cause/effect relationships
identifies and selects, from a limited range, more than one tool or piece of equipment to use effectively for a task.

### Criterion 3: complete tasks and communicate ideas and observations.

The learner :

Rating C
expresses at least one observation or idea using images, pictures, or simple statements
identifies and labels using at least one word, gesture, image, or object
recall and perform an appropriate sequence of actions to complete a task
appropriately identify and record the completion of a sequence of steps within a task.

#### Qualifications Available

*Preliminary Science* to Preliminary to Level 1: Stage 1, 2, 3 or 4 (with the award of):

SATISFACTORY ACHIEVEMENT

PRELIMINARY ACHIEVEMENT

## **Award Requirements**

The final award for *Preliminary Science* Stage 4 will be determined by the provider from three (3) ratings.

The minimum requirements for an award in each Stage of this course are as follows:

Satisfactory Achievement (SA)

3 'C' ratings

Preliminary Achievement (PA)

1 'C' rating

## **Course Evaluation**

The Department of Education's Curriculum Services will develop and regularly revise the curriculum. This evaluation will be informed by the experience of the course's implementation, delivery and assessment.

In addition, stakeholders may request Curriculum Services to review a particular aspect of an accredited course.

Requests for amendments to an accredited course will be forward by Curriculum Services to the Office of TASC for formal consideration. Such requests for amendment will be considered in terms of the likely improvements to the outcomes for learners, possible consequences for delivery and assessment of the course, and alignment with Australian Curriculum materials.

A course is formally analysed prior to the expiry of its accreditation as part of the process to develop specifications to guide the development of any replacement course.

## **Course Developer**

The Department of Education acknowledges the significant leadership of Peter Wright in the development of this course.

## **Accreditation**

The accreditation period for this course is from 1 January 2019 until 31 December 2023.

During the accreditation period required amendments can be considered via established processes.

Should outcomes of the Years 9-12 Review process find this course unsuitable for inclusion in the Tasmanian curriculum, its accreditation may be cancelled. Any such cancellation would not occur during an academic year.

## **Version History**

Version 1.0. Accredited on 14 December 2018 for use from 1 January 2019 until 31 December 2023.

This course replaces PRE015415 Nature and Environment that expired on 31 December 2018.

Version 1.a - 8 November 2019 addition of scientific terms to glossary in Appendix.



## Appendix

### Glossary of verbs

affect	to have an effect on; to
choose	decide or select the most suitable from a number of different options
create	make something
explore	investigate, search for
identify	recognise and name or indicate who or what someone or something is
label	identify by placing a name or word used to describe the object or thing
react/respond	an intentional repeatable and observable behaviour that can be interpreted simply, objectively and conclusively
recognise	intentionally signalling identification of (someone or something) through gesture, facial expression or sound from having encountered them before
select	choose in preference to another or others
sequence	arrange in order
show	give information; illustrate
subject matter	refers to the topic or theme under consideration
understand	perceive what is meant, grasp an idea, and to be thoroughly familiar with

### Glossary of Scientific Terms

Analyse	To consider in detail for the purpose of finding meaning or relationships, and identifying patterns, similarities and differences.
Characteristic	A distinguishing aspect (including features and behaviours) of an object material, living thing or event.
Classify	To arrange items into named categories in order to sort, group or identify them.
Conclusion	A judgement based on evidence.
Convention	An agreed method of representing concepts, information and behaviours.
Data	The plural of datum; the measurement of an attribute, the volume of gas or the type of rubber. This does not necessarily mean a single measurement: these can be quantitative or qualitative.
Design	To plan and evaluate the construction of a product or process, including an investigation.
Environment	All the surroundings, both living and non-living.
Evaluate	To examine and judge the merit or significance of something, including processes, events, descriptions, relationships or data.
Evidence	In science, evidence is data that is considered reliable and valid, and that can be used to support a particular idea, conclusion or decision. Evidence gives weight or value to data by considering its credibility, acceptance, bias, status, appropriateness and reasonableness.
Experiment/Experimental investigation	An investigation that involves carrying out a practical activity.


Fair test	An investigation where one variable (the independent variable) is changed and all other conditions (controlled variables) are kept the same; what is measured or observed is referred to as the dependent variable.
Field study / work	An observational or practical research undertaken in a normal environment of the subject of a study, that is, an investigation can be conducted outside the laboratory.
Force	A push or pull between objects, which may cause one or both objects to change speed and/or direction of their motion (that is, accelerate) or change their shape. All interactions between matter can be explained as an action of one or a combination of forces.
Formal measurement	Measurement based on an agreed standard unit (metre, second, gram).
Graph	A visual representation of the relationship between quantities plotted with reference to a set of axes.
Guided investigation	An investigation partly directed by a teacher.
Informal measurement	Measurement that is not based on any agreed standard unit (for example, hand spans, paces, cups).
Investigation	A scientific process of answering a question, exploring an idea or solving a problem that requires activities such as planning a course of action, collecting data, interpreting data, reaching a conclusion and communicating these activities.
Law	A statement of a relationship based on available evidence.
Material	A substance with particular qualities or that is used for specific purposes.
Matter	A physical substance; anything that has mass and occupies space.
Model	A representation that describes, simplifies, clarifies or provides an explanation of the workings, structure or relationships within an object, system or idea.
Natural materials	Products or physical matter that come from plants, animals, or earth and have undergone very little modification by humans.
Observable	Something that can be seen, heard, felt, tasted or smelled either directly by an individual or indirectly by a measuring device, for example, a ruler, camera or thermometer.
Processed materials	Products of physical matter that have been modified from natural materials by human intervention or that do not occur at all in the natural environment, but have been designed and manufactured to fulfil a particular purpose.
Property	An attribute of an object or material, normally used to describe attributes common to a group.
Qualitative data	Information that is not numerical in nature.
Quantitative data	Numerical information.
Relate	To identify connections or associations between ideas or relationships or between components of systems and structures.
Relationship	A connection or association between ideas or between components of systems and structures.
Report	A written account of an investigation.
Scientific literacy	An ability to use scientific knowledge, understanding, and inquiry skills to identify questions, acquire new knowledge, explain science phenomena, solve problems and draw evidence-based conclusions in making sense of the world, and to recognise how understandings of the nature, development, use and influence of science help us make responsible decisions and shape our interpretations of information.
Senses	Hearing, sight, smell, touch and taste.
System	A group of interacting objects, materials or processes that form an integrated whole.
Technology	A development of products, services, systems and environments, using various types of

	knowledge, to meet human needs and wants.
Theory	An explanation of a set of observations that is based on one or more proven hypotheses, which has been accepted through consensus by a group of scientists.

Line Of Sight

Learning Outcome	Criterion	Content	Criterion and elements
identify properties and behaviour of objects, living things and their environment	<p>Criterion 1</p> <p>Identify and organise by properties and behaviour</p>	<p>Stage 1 All</p> <p>Stage 2 All</p> <p>Stage 3 All</p> <p>Stage 4 All</p>	<p>Stage 1 C1 Elements 1, 2 and 3</p> <p>Stage 2 C1 Elements 1, 2 and 3</p> <p>Stage 3 C1 Elements 1, 2 and 3</p> <p>Stage 4 C1 Elements 1, 2 and 3</p>
find patterns in properties and behaviour of objects, living things and their environment	<p>Criterion 1</p> <p>Identify and organise by properties and behaviour</p>	<p>Stage 1 All</p> <p>Stage 2 All</p> <p>Stage 3 All</p> <p>Stage 4 All</p>	<p>Stage 3 C1 Elements 4, 5 and 6</p> <p>Stage 4 C1 Elements 4, 5 and 6</p>
observe and interpret change in properties and behaviour of objects, living things and their environment	<p>Criterion 2</p> <p>Use equipment and inquire into the world</p>	<p>Stage 1 All</p> <p>Stage 2 All</p> <p>Stage 3 All</p> <p>Stage 4 All</p>	<p>Stage 1 C2 Elements 1, 2 and 3</p> <p>Stage 2 C2 Elements 1, 2, 3 and 4</p> <p>Stage 3 C2 Elements 1, 2, 3 and 4</p> <p>Stage 4 C2 Elements 1, 2, 3 and 4</p>
use tools and equipment for a task	<p>Criterion 2</p> <p>Use equipment and inquire into the world</p>	<p>Stage 1 All</p> <p>Stage 2 All</p> <p>Stage 3 All</p> <p>Stage 4 All</p>	<p>Stage 1 C2 Element 5</p> <p>Stage 2 C2 Element 5</p> <p>Stage 3 C2 Element 5</p> <p>Stage 4 C2 Element 5</p>
communicate ideas and observations about their environment, objects and living things	<p>Criterion 3</p> <p>Complete tasks and communicate ideas and observation</p>	<p>Stage 1 All</p> <p>Stage 2 All</p> <p>Stage 3 All</p> <p>Stage 4 All</p>	<p>Stage 1 C3 All elements</p> <p>Stage 2 C3 Elements 1 and 2</p> <p>Stage 3 C3 Elements 1 and 2</p> <p>Stage 4 C3 Elements 1 and 2</p>
act on instructions and monitor their progress	<p>Criterion 3</p> <p>Complete tasks and communicate ideas and observation</p>	<p>Stage 1 All</p> <p>Stage 2 All</p> <p>Stage 3 All</p>	<p>Stage 2 C3 Elements 3 and 4</p> <p>Stage 3 C3 Elements 3 and 4</p> <p>Stage 4 C3 Elements 3 and 4</p>

**Supporting documents including external assessment material**

-  [Preliminary Qualifications Issuing Information.pdf](#) (2019-01-09 09:15am AEDT)



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