# Numeracy

# **Course Description**



VCE Vocational Major Numeracy focuses on enabling students to develop and enhance their numeracy skills to make sense of their personal, public and vocational lives. Students develop mathematical skills with consideration of their local, national and global environments and contexts, and an awareness and use of appropriate technologies.

This study allows students to explore the underpinning mathematical knowledge of number and quantity, measurement, shape, dimensions and directions, data and chance, the understanding and use of systems and processes, and mathematical relationships and thinking. This mathematical knowledge is then applied to tasks which are part of the students' daily routines and practices, but also extends to applications outside the immediate personal environment, such as the workplace and community.

The contexts are the starting point and the focus, and are framed in terms of personal, financial, civic, health, recreational and vocational classifications. These numeracies are developed using a problem-solving cycle with four components: formulating; acting on and using mathematics; evaluating and reflecting; and communicating and reporting.

# Course structure

## Unit 1

### Area of Study 1 - Number

In this area of study students will develop number sense through meaningful application of numeracy practices to a range of contexts where whole numbers, fractions, decimals and percentages are used. Students will select the appropriate method or approach required and communicate their ideas. They should be at ease with performing straightforward calculations both mentally, manually and using software tools and devices.

#### Area of Study 2 - Shape

In this area of study students will learn to recognise, describe and name common two- and three-dimensional shapes. They will classify, manipulate, represent and construct common and familiar shapes in diagrammatical and concrete forms. They will also become familiar with common characteristics and properties used in classifying shapes.

#### Area of Study 3 - Quantities and measures

In this area of study students will develop an understanding of routine and familiar metric quantities and their units of measurement applied to single- and multi-step measurement tasks. They will conduct estimations of measurements, undertake routine measurements, perform measurement calculations, and convert units within the metric system with the embedded use of different technologies.

#### Area of Study 4 - Relationships

In this area of study students will recognise, understand and represent simple patterns of relationship and change in mathematical terms where it exists in common and familiar contexts and applications. They should be able to recognise when change is occurring, be able to identify common and simple mathematical relationships and variables, and apply the most appropriate process or processes to determine the results of change.

## Unit 2

#### Area of Study 5 - Dimension and direction

In this area of study students will develop an understanding of space, direction and location in relation to common landmarks and key compass directions. They will give and follow directions to locations based on digital and printed maps and diagrams. The study of dimension also includes common and routine angles with degrees and an awareness of the one-, two- and three-dimensions of space.

#### Area of Study 6 - Data

Data can be found in everyday life, workplaces and society. In this area of study, students will collect, represent and undertake common analyses of data to look for patterns in data and derive meaning from data sets located within familiar and routine contexts. Data should be examined for comparison and analysis. Students should draw conclusions from the data and be confident in describing general patterns and trends.

#### Area of Study 7 - Uncertainty

In this area of study students will explore the basic concepts and everyday language of chance. They will make mathematical predictions about the likelihood of common and familiar events occurring or not occurring. They will also consider conclusions from familiar known events or data and make very simple inferences.

#### Area of Study 8 - Systematics

In this area of study students will understand the inputs and outputs of technology that can be used in everyday lives for the purposes of planning, collecting, sorting or categorising common and familiar quantitative or mathematical data and information. Students will choose a number of inputs of familiar data, compare the outputs and results, and understand the representations and any summary information derived from the technology.

## Unit 3

#### Area of Study 1 - Number

In this area of study students undertake single- and multi-step operations and tasks applied to a range of numbers, including positive and negative numbers, fractions, decimals and percentages and numbers expressed using familiar power notations. Students should be confident in selecting the appropriate method or approach required and communicating their ideas. They should be at ease with performing calculations both manually and using software tools and devices.

#### Area of Study 2 - Shape

In this area of study students learn to recognise and name a range of two-dimensional shapes and three-dimensional objects. They classify, manipulate, represent and construct a range of simple and compound shapes in diagrammatical and concrete forms. Students also become familiar with the different characteristics and properties used in classifying shapes.

#### Area of Study 3 – Quantity and measures

In this area of study students develop an understanding of metric measurements and their units of measurement applied to multi-step measurement tasks including working with commonly used non-metric measurements and their units of measure. Students will conduct estimations of measurements, perform a range of measurement calculations, and undertake conversions with the embedded use of different technologies.

#### Area of Study 4 - Relationships

In this area of study students recognise, understand and represent relationship and change in more formal mathematical terms, where it exists in relevant real-life contexts and applications. Students should understand when change is occurring and be able to identify and use formal mathematical relationships, variables, and mathematical processes to determine the results of change.

## Unit 4

#### Area of Study 5 - Dimension and direction

In this area of study students develop an understanding of the use of space, direction and location in relation to landmarks and compass directions. Students should be able to accurately give and follow complex directions to multiple locations based on digital and printed maps and diagrams. The study of dimension also includes angles with degrees and spatial awareness.

#### Area of Study 6 - Data

Data can be found in everyday life, workplaces and society. In this area of study, students collect, represent and undertake different analyses of data to discover patterns in data, undertake summary statistics, and derive meaning from data located within relevant but possibly unfamiliar or non-routine contexts. Data should be examined for comparison and analysis. Students should draw conclusions from the data and their analysis and be confident to represent, describe and reflect on any patterns, outcomes and trends.

#### Area of Study 7 - Uncertainty

In this area of study students use concepts of randomness, chance and probability. Students should be able to make mathematical predictions about the likelihood of events occurring or not occurring. They should be able to consider and make conclusions about likelihood based on the data and make straightforward inferences. Students should be familiar with the concept of risk and apply the idea of uncertainty to risk.

#### Area of Study 8 - Systematics

In this area of study students develop an understanding of inputs and outputs of technology, including emerging technologies, that can be used for the purposes of planning, collecting, sorting or categorising a range of quantitative or mathematical data and information. Students should be confident in choosing multiple inputs of data, compare the outputs and results, and analyse, review and make decisions and conclusions based on the representations and any summary information derived from the technology.

#### Entry and Recommendations

There are no prerequisites for entry to Numeracy Units, Students undertaking the Vocational Major pathway to VCE are required to complete a minimum of 2 Numeracy units and have a minimum requirement for units at 3 and 4 level. Therefore, students would be expected to enrol and complete all 4 units if choosing this pathway or an alternative VCE Mathematics sequence of 2 units.

# Assessment

## Satisfactory Completion

Demonstration of achievement of outcomes and satisfactory completion of a unit are determined by evidence gained through the assessment of a range of learning activities and tasks. Students must document work evidence in a folio or book and must meet the required standards of the unit.

## Level of Achievement

## All Numeracy Units

- Coursework
  - School based assessments
  - Mathematics class set tasks
  - $\circ \quad \text{Compiled submission of evidence}$
  - o Project based tasks and outcomes
  - Classroom based testing

