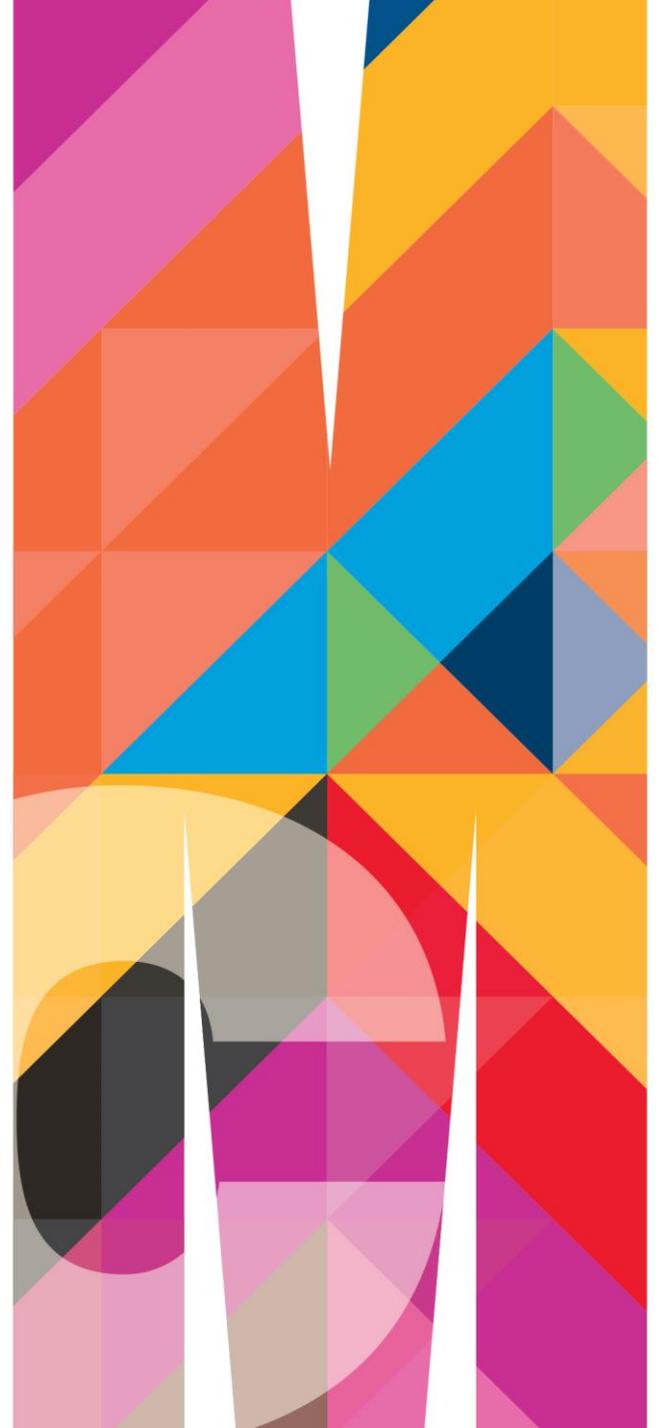


# Monash University Foundation Year

Subject guide for studies in  
**Semester 2, 2020B**



# Subject Guide - Contents

## Standard Foundation Year Units

*The Foundation Year is a 48 credit point course.  
Each Standard Foundation Year unit contributes 6 credit points  
towards course completion.*

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- [Information and Communication  
Technology \(ICT\)](#)
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- [Mathematics](#)
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- [Fundamental Mathematics](#)
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## Extended Foundation Year Units

*The Extended program is an additional support semester in the areas of  
mathematics, chemistry and English. Extended Foundation Year units do  
not contribute to Foundation Year course completion.*

### [Extended Program](#)

- [Extended: English](#)
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# MUF0011 English Unit 1: Academic Skills and Composition

## Overview

English develops your language, research, organisational and study skills to prepare you for tertiary education in Australia. You will learn how to speak confidently, listen, understand and analyse ideas, and become a strong reader and writer of academic English.

## Prerequisites

There are no prerequisites for English Unit 1. *MUF0011 English Unit 1: Academic Skills and Composition* is a compulsory subject.

## Knowledge and outcomes

At the end of this unit students will be able to:

- Develop strategies for comprehending, interpreting and communicating written and verbal information
- Apply appropriate referencing techniques and conventions
- Develop an understanding of how to collect, organise, analyse, synthesise and evaluate information
- Apply strategies and conventions for note-taking, paraphrasing, summarising and synthesis
- Understand how best to develop, argue and support their own point of view
- Use conventions of academic writing
- Understand value of feedback and self-reflection in informing learning progress
- Understand the importance of academic integrity in both an educational and professional setting

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Employ strategies for comprehending, interpreting and communicating written and verbal information
- Participate in collaborative learning through speaking, listening and co-operation
- Apply critical thinking skills through reflective decision-making

- Take responsibility for their own growth in learning through self-diagnosis, self-evaluation and establishing goals
- Demonstrate articulate communication through using the English language
- Read for gist and read for meaning
- Use language to analyse an argument in both oral and written form
- Use language to present and support an argument in oral and written forms
- Demonstrate academic skills such as note-taking, paraphrasing, synthesis of ideas and citation of sources
- Demonstrate an awareness of the principles of academic integrity and be able to apply this in their own academic conduct

Assessment	
Assessment Task	Weighting
Online Debate	10%
Argumentative Essay	15%
Group Presentation	15%
Group Essay	15%
Participation	15%
Examination	30%

# MUF0012 English Unit 2: Exploring Ideas

## Overview

This unit is intended to build on the skills developed in English Unit 1: Academic Skills and Composition. Students will further develop language skills (writing, speaking, listening, and reading), research, organizational, argumentative, and study skills. In addition, they will explore a range of concepts through reading and responding to texts and develop their understanding of academic writing conventions.

## Prerequisites

Monash University Foundation Year English is a compulsory subject. Students must satisfactorily complete *MUF0011 English Unit 1: Academic Skills and Composition* before proceeding to *MUF0012 English Unit 2: Exploring Ideas*.

## Knowledge and outcomes

At the end of this unit students will know how to:

- Comprehend, interpret and communicate written and verbal information
- Collect, organise, analyse, synthesise and evaluate information
- Explore and respond to a range of ideas through the study of various texts
- Plan their work and prioritise their time
- Draft, edit and proofread
- Act on feedback and evaluate their own learning progress

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Demonstrate an understanding of personal identity in conjunction with being able to show an emerging global vision through the exploration of a range of ideas in texts and by researching a challenging topic
- Participate in collaborative learning through speaking, listening and co-operation
- Take responsibility for their own growth in learning through establishing goals, self-diagnosis and self-evaluation

- Demonstrate articulate communication using the English language
- Read for meaning
- Plan, structure and revise their own writing
- Plan, prioritise and manage time
- Use language to communicate in both oral and written form
- Employ ICT as a mode of research, communication and presentation
- Collect, interpret and present mathematical data as supportive evidence in a research report
- Demonstrate sustainability and enterprise skills through initiative, problem-solving, reflection and revision

Assessment	
Assessment Task	Weighting
Literature Presentation	15%
Research Paper Outline	10%
Research Paper	30%
Participation	15%
Examination	30%

# MUF0021 Accounting Unit 1: Fundamentals of Accounting

## Overview

Unit 1 Accounting is the first unit of the Monash University Foundation Year Accounting course. This course is designed to provide an introduction to accounting concepts and vocabulary and build skills in recording and reporting financial information.

In Study Area 1, students will investigate the stages of the accounting process and the relationship of accounting elements in the accounting equation. In Study Area 2, students will record financial data and in Study Area 3, students will report financial information.

## Prerequisites

There are no prerequisites for Unit 1.

## Unit Learning Outcomes

At the end of this unit, students will be able to:

- Identify and explain the stages of the accounting process
- Define and identify accounting elements and account names
- Explain the relationship between elements of the accounting equation
- Calculate owner's equity using the accounting equation
- Prepare a Balance Sheet
- Apply the rules of double-entry accounting
- Explain the role of source documents in the accounting process
- Explain the role of journals in the recording stage
- List the five journals
- Record transactions into the appropriate special journal
- Total special journals at the end of the reporting period
- Use the General Journal to record transactions
- Explain the role of the General Ledger in the accounting process

- Post from journals to ledger accounts
- Foot owner's equity, revenue and expense accounts
- Balance asset and liability accounts
- Explain the role of, and prepare a trial balance
- Outline limitations of a trial balance
- Define and identify operating, financing and investing activities
- Prepare a Cash Flow Statement
- Define Cost of Goods Sold, Gross Profit, Other Expenses and Net Profit
- Prepare an Income Statement
- Define and identify current and non-current assets and liabilities
- Prepare a fully classified balance sheet

Assessment	
Assessment Task	Weighting
Group Film Project	15%
Skills and Application Test 1	20%
Skills and Application Test 2	20%
Participation	15%
Examination	30%

# MUF0022 Accounting Unit 2: Financial Accounting

## Overview

Unit 2 Accounting is the second unit of the Monash University Foundation Year Accounting course. This course is designed to extend on the accounting concepts covered in Unit 1.

In Study Area 1, students will record and report transactions related to stock. In Study Area 2, students will record and report balance day adjustments and in Study Area 3, students will analyse financial reports to evaluate business performance.

## Prerequisites

*MUF0022 Accounting Unit 2: Financial Accounting* can only be undertaken by students who have successfully completed *MUF0021 Accounting Unit 1: Fundamentals of Accounting*.

## Unit Learning Outcomes

At the end of this unit, students will be able to:

- Explain the role of a stock card, and its relationship to the Stock Control account
- Record transactions in stock cards
- Explain and apply the First In, First Out (FIFO) assumption to sales of stock
- Record stock gains and losses
- Record the use of stock for advertising purposes
- Prepare an Income Statement showing Gross Profit and Adjusted Gross Profit
- Record purchase and sales returns
- Report a sales return in the income statement
- Calculate and record depreciation expense using the straight-line method
- Report for depreciation in the Income Statement and Balance Sheet
- Explain the purpose of a balance day adjustment
- Identify and record prepaid expenses transactions

- Record balance day adjustments for accrued and prepaid expenses
- Report accrued and prepaid expenses in the financial reports
- Identify and record prepaid revenue transactions
- Record balance day adjustments for accrued and prepaid revenue
- Report accrued and prepaid revenue in the financial reports
- Prepare a Post-adjusted Trial Balance
- Analyse business performance by using trends, variances and benchmarks
- Interpret accounting information from graphical representations
- Define profitability, efficiency, liquidity and stability
- Calculate and interpret performance indicators
- Explain possible causes for changes in indicators
- Discuss strategies to improve business performance

Assessment	
Assessment Task	Weighting
Group Presentation	15%
Skills and Application Test 1	20%
Skills and Application Test 2	20%
Participation	15%
Examination	30%

# MUF0031 Biology Unit 1: The Basis For Life

## Overview

Biology is the study of living things, their structures and functions. It includes the study of how living things interact with each other and with their environment. The study of Biology provides the student with an understanding of the natural world and the role that humans play within it. It also provides the student with a scientific framework upon which to build hypothesis and design valid, controlled experiments.

## Prerequisites

Unit 1 Biology can be completed without completing Unit 2 Biology. However, Unit 2 cannot be undertaken without first completing Unit 1. The two units can be undertaken concurrently.

Biology uses its own, specific language. The development and utilisation of this new language is enhanced daily in Biology. It is recommended that students commencing the course are already familiar with some scientific and biological terms and concepts. Some skill using a light microscope would be advantageous.

## Knowledge outcomes

At the end of this unit students will be able to:

- Demonstrate an understanding and appropriate use of the language of Biology
- Demonstrate an understanding of the scientific method and the features of a well-designed experiment
- Demonstrate an understanding the structure and function of biological molecules, enzymes and energy systems
- Compare and contrast different cells and relate cell structure to function
- Demonstrate an understanding of homeostasis, negative feedback and the roles of the nervous system and endocrine system
- Demonstrate an understanding of pathogens and the immune system, immunity and autoimmune diseases

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently or as a team to achieve outcomes
- Apply biological and general scientific knowledge to identify and analyse concepts
- Present data or other scientific information using an appropriate format
- Collect, record and analyse data and evaluate experimental design
- Research, interpret and communicate information accurately relevant to a scientific concepts
- Recognise the importance of ethics and safety in the laboratory and comply with safety procedures

Assessment	
Assessment Task	Weighting
Skills and Application Task	20%
Practical Report 1	15%
Practical Report 2	20%
Participation	15%
Examination	30%

# MUF0032 Biology Unit 2: The Blueprint for Life

## Overview

Biology is the study of living things, their structures and functions. The study of Biology provides the student with an understanding of the natural world and the role that humans play within it. It also provides the student with a scientific framework upon which to build hypothesis and conduct valid, controlled experiments.

In this unit, students will develop their understanding of cellular reproduction; Mendelian genetics; mutation and its role in variation within populations; the mechanisms of evolution including primate adaptations and human evolution.

## Prerequisites

Biology Unit 1 can be completed without completing Biology Unit 2. However, Unit 2 cannot be undertaken without first completing Unit 1. The two units can be undertaken concurrently.

Biology uses its own, specific language. The development and utilisation of this new language is enhanced daily in Biology. It is recommended that students commencing the course are already familiar with some scientific and biological terms and concepts. Some skill using a light microscope would be advantageous.

## Knowledge outcomes

At the end of this unit students will be able to:

- Demonstrate an understanding and appropriate use of the language of Biology
- Compare and contrast sexual and asexual reproduction in terms of cellular processes and the effects of variation within a population
- Demonstrate an understanding of the mechanisms of inheritance and the effect of mutation on variation within a population and survival of a species
- Demonstrate an understanding of the processes of various biotechnologies and genetic engineering as well as the advantages, disadvantages and ethical concerns of their use
- Demonstrate an understanding of the evidence for and mechanisms of evolution
- Demonstrate an understanding of primate evolution, including the strengths and weaknesses of the models of hominin evolution

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently or as a team to achieve outcomes
- Apply biological and general scientific knowledge to identify and analyse concepts
- Present data or other scientific information using an appropriate format
- Collect, record and analyse data and evaluate experimental design
- Research, interpret and communicate information accurately relevant to a scientific concepts
- Recognise the importance of ethics and safety in the laboratory and comply with safety procedures

Assessment	
Assessment Task	Weighting
Skills and Application Task	20%
Practical Report 1	15%
Practical Report 2	20%
Participation	15%
Examination	30%

# MUF0041 Chemistry Unit 1: Chemistry and the Natural World

## Overview

Unit 1 Chemistry examines the structure and properties of matter. It is concerned with the behavior and interaction of chemical substances and the changes that occur during chemical reactions. Unit 1 Chemistry provides insights into natural phenomena at the molecular level, a framework of knowledge for the development of new materials and the means for the attainment of a sustainable environment for the future.

## Prerequisites

Before undertaking Chemistry Unit 1, it is recommended students have completed an appropriate Year 11 Chemistry or equivalent program. This includes a Year 11 knowledge of: Acids and bases, atomic structure, atomic number and mass number, calculation of relative atomic mass, combined gas equation, elements, compounds, mixtures, empirical and molecular formulas, gas behavior and gas laws, intermolecular forces, isotopes, metallic, ionic and covalent bonding, mole calculations, percentage composition, pH, polarity, polymers and polymerisation, properties of water related to structure and bonding, redox reactions, solubility and precipitation, stoichiometry and systematic naming of simple organic compounds.

## Knowledge outcomes

At the end of this unit students will be able to:

- Demonstrate an understanding of the language of Chemistry
- Complete calculations relating to the mole, solutions, gases and stoichiometry
- Demonstrate an understanding of atomic structure, the trends in the Periodic Table and bonding
- Relate bonding to the properties of substances
- Demonstrate an understanding of thermochemistry, rates and equilibrium concepts of reactions
- Demonstrate an understanding of acids and bases, including theories, pH calculations and buffers

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently or as a team to achieve outcomes
- Present data or other scientific information using an appropriate format
- Apply chemical and general scientific knowledge to identify, analyse and solve problems using appropriate chemical models, equations and calculations
- Collect, record and analyse data and evaluate experimental design
- Research, interpret and communicate information accurately relevant to a scientific concept
- Recognise the importance of green chemistry and safety in the laboratory and comply with safety procedures

Assessment	
Assessment Task	Weighting
Skills and Application Task	20%
Practical Report 1	15%
Practical Report 2	20%
Participation	15%
Examination	30%

# MUF0042 Chemistry Unit 2: Chemistry and the Changing World

## Overview

Unit 2 explores the area of Organic Chemistry and Energy and the impact of these on society and us. The development of new medicines and understanding their interaction with biological macromolecules along with the development of new sustainable polymers and energy sources are all very important areas of chemistry in a changing world. Unit 2 builds on the fundamental knowledge developed in Unit 1 to understand the world around us.

## Prerequisites

*MUF0042 Chemistry Unit 2: Chemistry and the Changing World* can only be undertaken by students who have successfully completed *MUF0041 Chemistry Unit 1: Chemistry and the Natural World*.

## Knowledge outcomes

At the end of this unit students will be able to:

- Demonstrate an understanding of the language of Chemistry
- Describe the structure, bonding and reactions of a range of organic compounds including polymers and biological macromolecules
- Demonstrate an understanding of techniques used to isolate and quantify organic compounds
- Demonstrate an understanding of the techniques used to determine the structure of an organic compound
- Demonstrate an understanding of the energy changes in chemical reactions and how this can be quantified.
- Demonstrate an understanding of the interconversion of chemical energy to electrical energy in electrochemical cells.

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently or as a team to achieve outcomes
- Present data or other scientific information using an appropriate format
- Apply chemical and general scientific knowledge to identify, analyse and solve problems using appropriate chemical models, equations and calculations
- Collect, record and analyse data and evaluate experimental design
- Research, interpret and communicate information accurately relevant to a scientific concept
- Recognise the importance of Green Chemistry and safety in the laboratory and comply with safety procedures

Assessment	
Assessment Task	Weighting
Skills and Application Task	20%
Practical Report 1	15%
Practical Report 2	20%
Participation	15%
Examination	30%

# MUF0051 ICT Unit 1: Introduction to Computers and Programming

## Overview

In this unit students will focus on processing data into information, using digital systems, to create information products.

In Study Area 1 students will collect primary data, use spreadsheet software to interrogate the data, then present their findings to an audience. In Study Area 2 students will be introduced to programming by creating applications using the Scratch programming environment. In Study Area 3 students will examine how digital system components are used to convert data into information.

## Prerequisites

There are no specific prerequisites for entry to this course. However, it is recommended that students possess basic computing skills.

## Knowledge outcomes

- Survey question types (and input controls) used to collect different types of data.
- Design tools used to plan the appearance and/or the functionality of information products.
- Software functions and techniques used to process data into information.
- Conventions appropriate to particular information products.
- Techniques used to evaluate the effectiveness of an information product.
- Purpose and elements of a visual programming environment.
- Capabilities and functions of digital system components.
- Advantages and disadvantages of using cloud computing and networks.

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Construct relevant survey questions to collect a range of primary data.
- Select appropriate design tools to plan particular information products.
- Use correct software functions and techniques to produce the information required.
- Incorporate suitable conventions to enhance the appearance of the information.
- Apply techniques to evaluate the effectiveness of information products.
- Apply computational thinking to develop an application using a programming language.
- Work collaboratively and effectively to explain the function of digital system components.
- Use feedback to reflect on their own learning and to develop strategies for improvement.

Assessment	
Assessment Task	Weighting
Data Analysis Task	20%
Programming Project	20%
Digital Systems Test	15%
Participation	15%
Examination	30%

# MUF0052 ICT Unit 2: Programming, Database and Data Science

## Overview

In Unit 2 ICT students will focus on how data is acquired, managed, and manipulated to meet a particular need.

In Study Area 1 students will examine how database management systems are used to store and manipulate data. In Study Area 2 students will acquire data sets from secondary sources then manipulate the data and create a report. In Study Area 3 students will use a programming language to create working modules.

## Prerequisites

The unit assumes no prior knowledge. There are no prerequisites required for *MUF0052 ICT Unit 2: Programming, Database and Data Science*. Unit 1 and Unit 2 may be taken concurrently or independently.

## Knowledge outcomes

At the end of this unit students will know:

- Stages involved in the software development process.
- Design tools used to represent software solutions.
- Software types and functions used to manipulate data.
- Techniques used to input and output data and information.
- Characteristics and purposes of data types and data formats.
- Functions and techniques used to validate data.
- Functions and techniques used to test that a solution is working as expected.
- Purpose of data science and techniques used to uncover findings within data sets.

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Develop software solutions following the software development process.
- Use appropriate design tools to plan a software solution.
- Select appropriate data types and formats to store and display data.
- Apply software functions and features to input, manipulate, output and validate data.
- Apply computational thinking skills to develop instructions to solve problems.
- Create and apply a test plan to confirm if a solution is working as expected.
- Work collaboratively to interrogate data to confirm or refute a hypothesis.
- Use a range of methods to communicate clearly in English.

Assessment	
Assessment Task	Weighting
Database Management System Task	20%
Data Science Group Project	20%
Programming Test	15%
Participation	15%
Examination	30%

# MUF0061 Economics Unit 1: Introduction to Microeconomics

## Overview

Economics studies choices that individuals, firms and governments make when allocating resources in an economy. This subject explores economic issues and the effect these have on our daily lives.

## Prerequisites

There are no specific pre-requisites for this unit.

## Knowledge outcomes

At the end of this unit students will be able to:

- Explain key economic concepts and the relationship between them.
- Explain and illustrate the operation of the market system.
- Explain sources of market failure and reasons for government intervention in the market.
- Describe the main characteristics of the four types of market structure and analyse the factors that affect the level of competition in each.
- Evaluate perfect competition and monopoly in terms of efficiency

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Appropriately apply and use economic concepts, theories, models and tools.
- Use a range of sources to acquire economic information.
- Research and communicate economic information
- Interpret and analyse numerical data.
- Construct diagrams and tables to represent economic data.
- Think critically about economic issues and problems
- Develop an awareness of how political, ethical, environmental, global and social factors may influence the outcomes of economic decision making.

Assessment	
Assessment Task	Weighting
Skills and Application Task SA1	15%
Skills and Application Task SA2	20%
Group Essay	20%
Participation	15%
Examination	30%

# MUF0062 Economics Unit 2: Introduction to Macroeconomics

## Overview

While Microeconomics involves analysing economic decision making of individuals and firms at a market or personal level, Macroeconomics takes a broader approach and considers the behaviour of the entire economy in terms of its output, income, employment and other indicators. This unit will introduce you to macroeconomic goals of an economy, the ways in which achievement of these goals is measured and the models we use to analyse causes and effects in the economy. You will learn about government policies that can assist in achieving goals and lead to higher living standards for everyone. Finally, you will analyse the way in which an economy's interactions with the rest of the world impact on its performance.

## Prerequisites

*MUF0061 Economics Unit 1: An Introduction to Microeconomics* is a co-requisite for *MUF0062 Economics Unit 2: An Introduction to Macroeconomics*. Students must successfully pass Unit 1 before proceeding to Unit 2 or study Unit 1 and Unit 2 concurrently.

## Knowledge outcomes

At the end of this unit students will be able to:

- Explain and evaluate key macroeconomic goals and their measurement.
- Describe factors that may influence the achievement of macroeconomic goals.
- Explain and illustrate key macroeconomic models, and use them to demonstrate the impact of various factors on the achievement of macroeconomic goals.
- Explain the nature and operation of monetary and fiscal policies used to manage the economy.
- Evaluate the appropriateness of macroeconomic policies used to manage the economy.
- Explain the impact of the external sector on the domestic economy, and evaluate the issue of foreign debt.

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Appropriately apply and use economic concepts, theories, models and tools.
- Use a range of sources to acquire economic information.
- Research and communicate economic information
- Interpret and analyse numerical data.
- Construct diagrams and tables to represent economic data.
- Think critically about economic issues and problems
- Develop an awareness of how political, ethical, environmental, global and social factors may influence the outcomes of economic decision making.

Assessment	
Assessment Task	Weighting
Skills and Application Task SA1	10%
Group Research Presentation	20%
Research Essay	20%
Skills and Application Task SA3	10%
Participation	10%
Examination	30%

# MUF0091 Mathematics Unit 1: Functions and Calculus

## Overview

This course explores the properties of a wide range of functions and their graphs, as well as the calculus process of differentiation. Applications of these properties and processes are an important part of this unit. In this course, students will develop the critical, logical and communicative skills to solve real world problems using higher order mathematical concepts.

## Prerequisites

In order to succeed in this unit, it is recommended that students will have satisfactorily completed an appropriate Year 11 Mathematics or equivalent program. Background knowledge and skills in algebra, graph sketching, elementary functions such as polynomial and trigonometric functions, and introductory calculus are essential.

Unit 1 and Unit 2 can be taken concurrently or sequentially. Mathematics (MUF0091/MUF0092) is a pre-requisite/co-requisite for Advanced Mathematics (MUF0101/MUF0102). Mathematics (MUF0091/MUF0092) cannot be studied in conjunction with Fundamental Mathematics (MUF0141/MUF0142).

## Knowledge outcomes

At the end of this unit students will be able to:

- Recognise power functions ( $f(x)=x^n$  when  $n = -1, 1, 2, 3, 4, \frac{1}{2}$ ), their graphs and be familiar with their properties
- Recognise exponential, logarithmic and trigonometric (excluding the graph of the tangent function) functions and be familiar with their properties
- Solve polynomial, exponential, logarithmic and trigonometric equations (including equations with tangent), and applications in word problems
- Identify and use the properties of inverse functions and be able to solve mathematical problems using these properties
- Calculate average and instantaneous rates of change, including the use of the differentiation process for the functions relevant to this unit
- Apply differentiation techniques in the solution of problems
- Use differentiation for curve sketching and optimisation problems
- Use problem solving strategies such as: partitioning problems into sub-problems to simplify and organise the investigation process, identifying and working on related problems, and checking validity of answers

- Communicate arguments and strategies, when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Apply knowledge in both routine and non-routine questions

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently, and as an effective member of a team, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Interpret mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate awareness of different ways of thinking and problem solving in contexts involving graphs and functions.
- Demonstrate proficiency in the use of tools such as graphics calculators, spreadsheets and other technologies
- Analyse mathematical situations in order to draw conclusions and make predictions
- Collaborate and cooperate, challenge the reasoning and perspectives of others, and contribute mathematical learning to investigations involving a range and balance of situations from life-related to purely mathematical.

Assessment	
Assessment Task	Weighting
Study Area 1 Test	17%
Study Area 2 Test	17%
Application Task (Group)	12%
Study Area 3 Test	14%
Participation	10%
Examination	30%

# MUF0092 Mathematics Unit 2: Integration, Probability and Statistics

## Overview

Unit 2 explores the concepts within the study of Integration, Probability Theory, Probability Distributions and Statistics. This course is a continuation of calculus from Mathematics Unit 1, as well as exploration of probability and statistics. Applications of these concepts and processes are an integral part of this unit. In this course, students will gain valuable insights into the influence of data and develop mathematical skills that can be widely applied in areas of higher order thinking.

## Prerequisites

In order to succeed in this unit, it is recommended that students will have satisfactorily completed an appropriate Year 11 Mathematics or equivalent program. Background knowledge and skills in algebra, graph sketching, elementary functions such as polynomial and trigonometric functions, and introductory calculus are essential.

Unit 1 and Unit 2 can be taken concurrently or sequentially. Mathematics (MUF0091/MUF0092) is a pre-requisite/co-requisite for Advanced Mathematics (MUF0101/MUF0102). Mathematics (MUF0091/MUF0092) cannot be studied in conjunction with Fundamental Mathematics (MUF0141/MUF0142).

## Knowledge outcomes

At the end of this unit students will be able to:

- Apply integration techniques in the solution of problems
- Understand basic probability theory, identify specified strategies and techniques of probability calculations including Venn, Karnaugh, lattice and tree diagrams
- Understand conditional probability and independent events
- Use counting techniques (permutations/arrangements and combinations/selections) to calculate probabilities
- Identify the properties of discrete and continuous random variables and understand the idea of a probability distribution
- Recognise and identify the properties of the binomial and normal probability distributions
- Be able to solve mathematical problems using probability concepts and probability distributions
- Identify and apply specified methods for organising, displaying, summarising and analysing data sets
- Graph and analyse bivariate data and create a model to predict data values
- Communicate arguments and strategies, when solving problems, using appropriate mathematical language

- Use problem solving strategies such as: partitioning problems into sub-problems to simplify and organise the investigation process, identifying and working on related problems, and checking validity of answers
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Apply knowledge in both routine and non-routine questions

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently, and as an effective member of a team, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Interpret mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate awareness of different ways of thinking and problem solving in contexts involving graphs and functions.
- Demonstrate proficiency in the use of tools such as graphics calculators, spreadsheets and other technologies
- Analyse mathematical situations in order to draw conclusions and make predictions
- Collaborate and cooperate, challenge the reasoning and perspectives of others, and contribute mathematical learning to investigations involving a range and balance of situations from life-related to purely mathematical.

Assessment	
Assessment Task	Weighting
Study Area 1 Test	14%
Study Area 2 Test	17%
Application Task (Group)	12%
Study Area 3 Test	17%
Participation	10%
Examination	30%

# MUF0101 Advanced Mathematics Unit 1: Essential Concepts

## Overview

This course is the answer to 'why' and the key to gaining lifelong transferrable mathematical skills by applying higher order thinking skills and exploring sophisticated ideas for real world applications. Students will learn to explain, link essential mathematical concepts by applying elegant mathematical techniques. This will give students the opportunity to develop their literacy and ways of critical and creative thinking through mathematical discourse.

## Prerequisites

Monash University Foundation Year Advanced Mathematics has been designed to prepare students who intend to undertake tertiary courses with a high mathematical content, or which use a considerable amount of mathematical reasoning. Advanced Mathematics may be a prerequisite subject for a number of Monash University destination degrees.

Students undertaking *MUF0101 Advanced Mathematics Unit 1: Essential Concepts* must be concurrently studying *MUF0091 Mathematics Unit 1: Functions and Calculus*, or will have satisfactorily completed this unit previously.

Advanced Mathematics (*MUF0101/MUF0102*) cannot be studied in conjunction with Fundamental Mathematics (*MUF0141/MUF0142*).

While Unit 1 can be completed as a single unit, Unit 2 can only be undertaken upon satisfactory completion of Unit 1.

## Knowledge outcomes

At the end of this unit students will be able to:

- Define and explain concepts and techniques related to Conics, Matrices, Linear Algebra, Vectors, Trigonometry and Complex Numbers
- Apply related mathematical concepts and techniques to solve problems involving Conics, Matrices, Linear Algebra, Vectors, Trigonometry and Complex Numbers including worded application problems
- Communicate and explain strategies with reasoning when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Choose and use technology appropriately and efficiently

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Demonstrate independent learning
- Work as an effective member of a group, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Display awareness of different ways of thinking and problem solving
- Apply critical thinking to mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate proficiency in the use of tools such as graphic calculators and other technologies

Assessment	
Assessment Task	Weighting
Vectors Test	15%
Language Task	15%
Complex Numbers and Conics Test	15%
Trigonometry Test	15%
Participation	10%
Examination	30%

\*\* Please note *MUF0101 Advanced Mathematics Unit 1* will not be offered in Melbourne in Semester 2B

# MUF0102 Advanced Mathematics Unit 2: Calculus with Applications

## Overview

Gaining critical problem solving skills is what this course is about.

Learning the language of mathematics, particularly involving calculus, sets a student up to tackle real world problems.

Exciting careers await those with these skills and strong mathematical knowledge.

## Prerequisites and prohibitions

*MUF0102 Advanced Mathematics Unit 2: Calculus with Applications* can only be undertaken upon satisfactory completion of *MUF0101 Advanced Mathematics Unit 1: Essential Concepts* and *MUF0091 Mathematics Unit 1: Functions and Calculus*.

Students undertaking Advanced Mathematics Unit 2: Calculus with Applications must be concurrently studying MUF0092 Mathematics Unit 2: Integration, Probability & Statistics or will have satisfactorily completed this unit previously.

Advanced Mathematics (*MUF0101/MUF0102*) cannot be studied in conjunction with Fundamental Mathematics (*MUF0141/MUF0142*).

## Knowledge outcomes

At the end of this unit students will be able to:

- Define and explain concepts and techniques related to calculus and its applications.
- Apply related mathematical concepts and techniques to solve problems involving calculus and its applications.
- Communicate arguments and strategies, when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Choose and use technology appropriately and efficiently

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Demonstrate independent learning
- Work as an effective member of a group, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Display awareness of different ways of thinking and problem solving
- Apply critical thinking to mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate proficiency in the use of tools such as graphics calculators and other technologies

Assessment	
Assessment Task	Weighting
Calculus Techniques Test	15%
Applications of Calculus Language Task	15%
Differential Equations Test	15%
Kinematics and Vector Calculus Test	15%
Participation	10%
Examination	30%

# MUF0121 Physics Unit 1: Mechanics and Thermodynamics

## Overview

Mechanics is the study of motion. This course covers how a physical object moves and the analysis of why it moves. Thermodynamics is the study of heat and temperature and their relationship to energy and work.

The topics of mechanics and thermodynamics are interrelated and are applied across sciences and engineering. Examples where a knowledge of mechanics and thermodynamics is required include areas of sport, transport, design, construction and space exploration.

## Prerequisites

MUF0121 Physics Unit 1: Mechanics and MUF0122 Physics Unit 2: Waves, Fields and Particles can be taken in either order or concurrently. However, it is recommended that students successfully complete MUF0121 Physics Unit 1: Mechanics and Thermodynamics prior to undertaking MUF0122 Physics Unit 2: Waves, Fields and Particles.

## Knowledge outcomes

At the end of this unit students will be able to:

- Define a number of key physical quantities such as displacement, velocity, acceleration, work, momentum, impulse, power, energy, centripetal force, universal gravitation force.
- Define key thermodynamic quantities such as heat and temperature.
- State a number of key laws of classical mechanics such as Newton's Three Laws of Motion, work-energy, energy and momentum conservation, uniform circular motion and Newton's law of universal gravitation.
- State key equations that govern thermal expansion, specific heat capacity and latent heat and the transfer of heat
- Solve problems and give correct numerical answers, using a variety of techniques such as application of formulae, diagrams, graphical analysis and scale drawings.
- Apply physics concepts and equations to explain and understand various physical phenomena.
- Understand the role of physics as an experimental science and the need for measurements and data to test validity of models or hypotheses.
- Organise data and apply information to complex situations.
- Use measuring instruments to analyse aspects of kinematics, dynamics and statics.

- Design and perform appropriate experimental investigations
- Write scientific reports of experimental investigations

## Skills and behaviours

At the end of this unit students will be able to:

- Apply the principles of classical mechanics when answering quantitative and qualitative questions
- Show independence, enterprise and flexibility in selecting and using a variety of problem-solving methods
- Measure and record experimental quantities accurately to the appropriate number of significant figures and give some estimate of the uncertainties
- Plan and perform experimental investigations efficiently, pay attention to safety
- Work independently to master new concepts making use of a variety of resources
- Work with other students in teams assigned by the teacher
- Communicate their understanding of physics in a clear and organised manner, using the key concepts and terms covered in this course
- Use measuring instruments and technology to obtain relevant experimental data
- Use spreadsheets to record and manipulate data and produce graphs and trendlines
- Write an experimental report which includes a conclusion and an evaluation

Assessment	
Assessment Task	Weighting
Skills and Application Task	15%
Practical Report 1	20%
Practical Report 2	25%
Participation	10%
Examination	30%

# MUF0122 Physics Unit 2: Waves, Fields and Particles

## Overview

This unit starts with the study of electromagnetic radiation, particularly visible light and investigates the properties of these types of waves. The Fields topic includes electricity and magnetism and how these concepts are applied. Particle physics, focusses on nuclear physics and the interaction of light and matter. There are many places that these technologies are applied in modern society, from communications, power generation, material analysis and medical imaging.

## Prerequisites

MUF0121 Physics Unit 1: Mechanics and MUF0122 Physics Unit 2: Waves, Fields and Particles can be taken in either order or concurrently. However, it is recommended that students successfully complete MUF0121 Physics Unit 1: Mechanics prior to undertaking MUF0122 Physics Unit 2: Waves, Fields and Particles.

## Knowledge outcomes

At the end of this unit students will be able to:

- Define key concepts of wave theory including frequency, period, wavelength, phase and amplitude; and use these concepts in explanations of superposition, interference, and standing waves.
- Define key concepts of electricity and magnetism, including charge, current, voltage, power, electric and magnetic fields, and magnetic flux; and use these concepts in explanations of transformers, electric motors, generators and mass spectrometers and synchrotrons
- Define key concepts of modern physics including sub-atomic particles (electrons, protons, neutrons and photons), the equivalence of mass and energy, energy levels, and de Broglie wavelength; and use these concepts in explanations of nuclear reactions, radioactivity, emission and absorption spectra and the photo-electric effect
- Solve problems and give correct numerical answers, using a variety of techniques such as application of formulae, diagrams, graphical analysis and scale drawings
- Apply physics concepts and equations to explain and understand various physical phenomena
- Understand the role of physics as an experimental science and the need for measurements and data to test the validity of models or hypotheses
- Organise data and apply information to complex situations

- Use measuring instruments to analyse aspects of kinematics, dynamics and statics
- Design and perform appropriate experimental investigations
- Write scientific reports of experimental investigations

## Skills and behaviours

At the end of this unit students will be able to:

- Apply the principles of classical mechanics when answering quantitative and qualitative questions
- Show independence, enterprise and flexibility in selecting and using a variety of problem-solving methods
- Measure and record experimental quantities accurately to the appropriate number of significant figures and give some estimate of the uncertainties
- Plan and perform experimental investigations efficiently, paying attention to safety
- Work independently to master new concepts making use of a variety of resources
- Work with other students in teams assigned by the teacher
- Communicate their understanding of physics in a clear and organised manner, using the key concepts and terms covered in this course
- Use measuring instruments and technology to obtain relevant experimental data
- Use spreadsheets to record and manipulate data and produce graphs and trend lines
- Write an experimental report which includes a conclusion and an evaluation

Assessment	
Assessment Task	Weighting
Skills and Application Task	15%
Practical Report 1	20%
Practical Report 2	25%
Participation	10%
Examination	30%

# MUF0131 Global Studies Unit 1: Nations, Economics and People

## Overview

This course examines the process of globalisation specifically studying the relationships and interdependence between countries, economies and people in our modern world. This course is designed for students to gain and use the core academic skills of reading, thinking, writing and discussing an academic topic.

## Prerequisites

While Global Studies Unit 1: Nations, Economics and People can be completed without completing Global Studies Unit 2: Culture, Rights and Reactions, Unit 2 cannot be undertaken without completing Unit 1. Students may undertake both units concurrently.

## Knowledge outcomes

At the end of this unit students will be able to:

- Recall, explain and perform basic analysis of key elements of globalisation, with particular emphasis on political, economic and social globalisation
- Apply understanding of globalisation to key topics studied – global governance, economic globalization and migration
- Identify experiences of globalisation relevant to their own lives, and situate these within wider trends
- Select and use evidence using a process of reasoning to build and support convincing arguments
- Write text responses using academic conventions and incorporating key content
- Begin to use and understand conventions of source referencing and acknowledgement appropriate to the university environment
- Develop critical thinking strategies by interpreting, analysing and evaluating different elements of globalisation

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Question their place and roles in a globalising world
- Read and develop inquiry techniques when processing information from text types like websites, newspapers and textbooks.
- Apply knowledge to work ethically with others, demonstrating cultural awareness
- Articulate and evaluate different perspectives on issues to form conclusions
- Communicate in a variety of forms, including academic writing and group discussions
- Use feedback to monitor and improve learning

Assessment	
Assessment Task	Weighting
Definition and Key Concept Test	5%
Guided Inquiry	20%
Research Essay	35%
Participation	10%
Examination	30%

# MUF0132 Global Studies Unit 2: Culture, Rights and Reactions

## Overview

In this unit, students continue the examination of some of the recent history and key aspects of globalisation. They explore how and to what extent the apparent globalisation of the world is affecting governance, economics and peoples, with a particular emphasis on how it shapes cultures across the world and how it informs and is informed by a discourse of human rights. Students also examine how different nations, governing bodies, societies and cultures respond to globalisation. The course is designed to consolidate students' skills of analysis, research and presentation of ideas within an Arts/Humanities framework.

## Prerequisites

*Global Studies Unit 1* and *Global Studies Unit 2* can be taken sequentially (recommended) or concurrently. Students must pass Unit 1 prior to enrolling in Unit 2 or be concurrently enrolled.

## Knowledge outcomes

At the end of this unit students will be able to:

- Recall, explain and analyse key elements of globalisation, with particular emphasis on cultural globalisation, human rights and reactions to globalisation.
- Understand the impact of globalisation on cultures and the way in which some cultures influence others.
- Apply an understanding of globalisation to the world around them, particularly in the contexts of evolving human rights discourses, identified trends in cultural globalisation including, but not limited to 'Americanisation' and 'Westernisation, and anti-globalisation movements.
- Identify experiences of globalisation relevant to their own cultures and lives, and situate these within wider trends
- Conduct research to provide credible sources for a seminar presentation and extended responses
- Evaluate texts critically and analyse data to draw conclusions
- Select and use evidence to build and support convincing arguments
- Develop understanding and knowledge to use conventions of source referencing and acknowledgement appropriate to the Arts/Humanities
- Develop critical thinking strategies to consider different elements of globalisation.

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Question their place and roles in a globalising world.
- Read and develop inquiry techniques when processing information from text types like websites, newspapers and textbooks.
- Read, view and listen critically to make informed conclusions
- Articulate and evaluate different perspectives on issues to form conclusions.
- Apply knowledge to work ethically with others, demonstrating cultural awareness.
- Use communication skills in ways that allow for effective collaborative learning
- Communicate in a variety of forms, including academic writing and group discussions.
- Use feedback to monitor and improve learning.

Assessment	
Assessment Task	Weighting
Student led Seminar	25%
Extended Written Response	25%
Socratic Seminar	10%
Participation	10%
Examination	30%

# MUF0141 Fundamental Mathematics Unit 1: Applications of Mathematics

## Overview

This course will give students the opportunity to develop mathematics skills which can be applied in their everyday lives.

There will be a focus on understanding the world through patterns and relationships, and development of financial skills.

## Prerequisites

In order to succeed in this unit, it is recommended that students will have satisfactorily completed an appropriate Year 11 Mathematics or equivalent program.

Presumed knowledge for Unit 1 includes skill in estimation and calculation with number and in problem solving using basic algebra and graphs. Background knowledge and skills in number operations, and introductory algebra, are expected. It is not expected that time will be spent introducing this presumed knowledge and skills, but it is assumed that the level of proficiency will allow for immediate reinforcement through the application developed within the unit.

Monash University Foundation Year Fundamental Mathematics (MUF0141/MUF0142) can be completed concurrently, or sequentially.

MUF0142 can only be undertaken upon satisfactory completion of MUF0141, or as a concurrent study.

Monash University Foundation Year Fundamental Mathematics (*MUF0141/MUF0142*) cannot be studied in conjunction with Mathematics (*MUF0091/MUF0092*) or Advanced Mathematics (*MUF0101/MUF0102*).

## Knowledge outcomes

At the end of this unit students will be able to:

- Define and explain concepts and techniques related to graphs and relations, sequences and series and business mathematics
- Apply related mathematical concepts and techniques to solve problems involving graphs and relations, sequence and series and business mathematics including applications in word problems
- Communicate arguments and strategies, when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Choose and use technology appropriately and efficiently.

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently, and as an effective member of a team, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Interpret mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate awareness of different ways of thinking and problem solving in contexts involving graphs and relations, sequences and series and business mathematics.
- Demonstrate proficiency in the use of tools such as graphics calculators, spreadsheets and other technologies

Assessment	
Assessment Task	Weighting
Language Task	5%
Graphs & Relations Test	20%
Sequences & Series Test	20%
Business Mathematics Group Application Task	15%
Participation	10%
Examination	30%

# MUF0142 Fundamental Mathematics Unit 2: Data Analysis

## Overview

This course will give you the opportunity to develop mathematics skills which will be relevant for future study, and careers across a variety of sectors. There will be a focus on understanding the world through data, and using analysis to make data meaningful. There will be an opportunity to build on the skills learnt in Unit 1, and extend them into the study of probability and statistics.

## Prerequisites

In order to succeed in this unit, it is recommended that students will have satisfactorily completed an appropriate Year 11 Mathematics or equivalent program.

Background knowledge and skills in number operations, graph sketching and introductory algebra are essential. It is not expected that time will be spent introducing this presumed knowledge and skills, but it is assumed that the level of proficiency will allow for immediate reinforcement through the applications developed within the unit.

*MUF0142 Fundamental Mathematics Unit 2: Data Analysis* can only be undertaken upon satisfactory completion of Unit 1 or as a concurrent study.

Monash University Foundation Year Fundamental Mathematics (*MUF0141/MUF0142*) cannot be studied in conjunction with Mathematics (*MUF0091/MUF0092*) or Advanced Mathematics (*MUF0101/MUF0102*).

## Knowledge outcomes

At the end of this unit students will be able to:

- Define and explain concepts and techniques related to univariate and bivariate statistics, and probability
- Identify and apply specified methods for organising, displaying and summarising datasets
- Apply related mathematical concepts and techniques to solve problems involving univariate and bivariate statistics, and probability
- Communicate arguments and strategies, when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Choose and use technology appropriately and efficiently

## Skills and behaviours outcomes

At the end of this unit students will be able to:

- Work independently, and as an effective member of a team, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Interpret mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate awareness of different ways of thinking and problem solving in contexts involving univariate and bivariate statistics, and probability
- Demonstrate proficiency in the use of tools such as graphics calculators, spreadsheets and other technologies

Assessment	
Assessment Task	Weighting
Univariate Data Test	17.5%
Bivariate Data Group Application Task	10%
Bivariate Data Test	15%
Probability Test	17.5%
Participation	10%
Examination	30%

# MUF0151 Contemporary Issues Unit 1: Health and Sustainability

## Overview

Contemporary Issues acknowledges the reality that many current world issues will become the responsibility of younger generations. By exploring and analysing a selection of these issues, you will be encouraged to see yourself as a global citizen and to understand how you can have a positive impact on the world around you. The development of strong communication, collaboration and critical thinking skills will be at the forefront of this unit.

## Prerequisites

While Contemporary Issues Unit 1: Health and Sustainability can be completed without completing Contemporary Issues Unit 2: Conflict and Inequality, Unit 2 cannot be undertaken without completing Unit 1.

## Knowledge outcomes

At the end of this unit, students will be able to:

- Recall, explain and perform basic analysis of key elements of the social aspects of various health and sustainability issues.
- Apply a basic understanding of sociology to the key topics studied – health and sustainability.
- Identify how contemporary issues in the world are relevant to their own lives.
- Understand what it means to be a global citizen.
- Understand the need to be critical consumers of media, especially as it relates to a variety of contemporary issues.
- Select and use evidence using a process of reasoning to build and support convincing arguments.
- Write text responses using academic conventions and incorporating key content.
- Begin to use and understand conventions of source referencing and acknowledgement appropriate to the university environment.
- Develop critical thinking strategies by interpreting, analysing and evaluating a variety of contemporary world issues.

## Skills and behaviours outcomes

At the end of this unit, students will be able to:

- Question their place and role within key issues of the world today
- Develop critical thinking techniques in order to read and process information from a variety of texts, including but not limited to: websites; newspapers and, textbooks.
- Identify and understand the difference between the reporting of facts and opinions.
- Apply knowledge to work ethically with others, demonstrating cultural awareness.
- Articulate and evaluate different perspectives on issues to form conclusions.
- Communicate in a variety of forms, including academic writing and group discussion.
- Use feedback to monitor and improve learning.

Assessment	
Assessment Task	Weighting
Socratic Seminar 1	15%
Group Investigation and Student Seminar	30%
Report	30%
Socratic Seminar 2	15%
Participation	10%

# MUF0152 Contemporary Issues Unit 2: Conflict and Inequality

## Overview

Contemporary Issues Unit 2 aims to help students consolidate the skills of critical thinking and communication established in Unit 1, while building confidence in University style learning and assessment. This will be done by exploring the main topics of conflict and inequality, while reinforcing the concept of being a global citizen.

## Prerequisites

While Contemporary Issues Unit 1: Health and Sustainability can be completed without completing Contemporary Issues Unit 2: Conflict and Inequality, Unit 2 cannot be undertaken without completing Unit 1.

## Knowledge outcomes

At the end of this unit, students will be able to:

- Recall, explain and perform basic analysis of key elements of the social aspects of various conflict and inequality issues.
- Apply a basic understanding of sociology to the key topics studied – conflict and inequality.
- Articulate how contemporary issues in the world are relevant to their own lives
- Understand what it means to be a global citizen.
- Understand how to be critical consumers of media, especially as in relation to the reporting and discussion of a variety of contemporary issues.
- Select, evaluate and use evidence using a process of reasoning to build and support convincing arguments.
- Write text responses using academic conventions and incorporating key content.
- Use and understand conventions of source referencing and acknowledgement appropriate to the university environment.
- Demonstrate critical thinking strategies by interpreting, analysing and evaluating a variety of contemporary world issues.
- Demonstrate a basic understanding of the links that can exist between the issues studied in Unit 1 and Unit 2 (Health, Sustainability, Conflict and Inequality)

## Skills and behaviours outcomes

At the end of this unit, students will be able to:

- Question their place and role within key issues of the world today
- Demonstrate critical thinking techniques in order to read/view, evaluate and process information from a variety of texts, such as websites, newspapers, textbooks and videos
- Identify and discuss the significance of gaps and/or silences within media reporting of key issues/events
- Apply knowledge to work ethically with others, demonstrating cultural awareness.
- Articulate and evaluate different perspectives on issues to form conclusions.
- Ask questions and engage in discussion that allows for the demonstration of analysis, synthesis and evaluation
- Communicate in a variety of forms, including academic writing and group discussion
- Use feedback to monitor and improve learning.

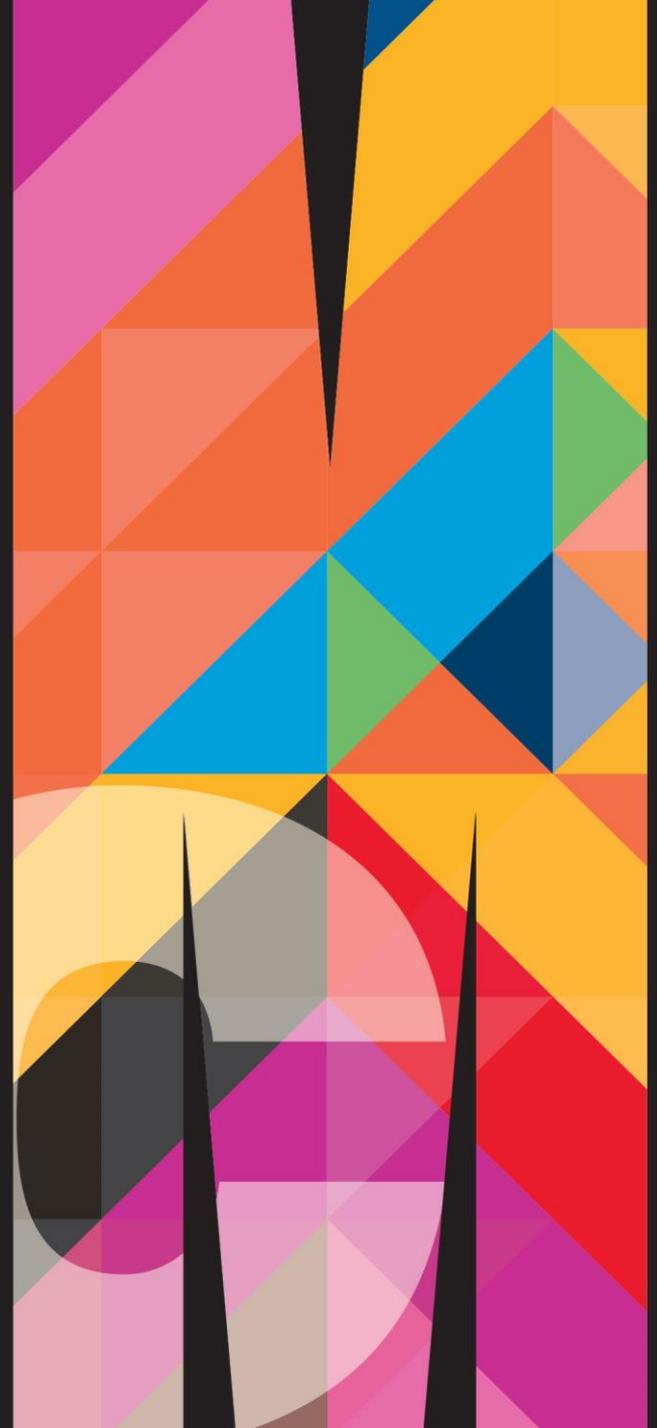
Assessment	
Assessment Task	Weighting
Weekly Reading Task	20%
Group investigation and student led seminar	25%
Essay	30%
Socratic Seminar	15%
Participation	10%



MONASH  
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# Monash University Foundation Year Extended

Subject Guide for studies in **Semester 2, 2020**



# Extended Program

## Extended Requirements

All Extended units require a minimum of IELTS 5.0 with no band lower than 5.0.

## Overview

The Monash College Extended program offers additional support and services to help students achieve success in the Monash College Foundation Year and Monash University. Each student will have an individualised learning plan designed to help you get the most out of the program, and you will have regular meetings with a learning skills advisor to ensure you are meeting the challenges of your studies.

This is particularly important for students aged under 18, students with high academic aspirations such as Pharmacy or Medicine, and students who need to improve their English language competency and their mathematical preparedness to tackle the Standard maths curriculum. It is also designed to prepare students better for Chemistry and Biology.

The program includes [English](#), which is essential to achieve strong marks throughout your university journey; [Ideas and Communication](#), which helps you build critical thinking skills and build your confidence; [Foundations for Calculus](#) or a formative [Mathematics in Context](#) that will ensure you are ready for the maths you will encounter in our program and at Monash; and a choice between [Chemistry and Life](#) which will set you up to do brilliantly in Chemistry and Biology; or [Business Enterprise](#), where you will learn to set up your own small business. Your extended units do not count towards your final Foundation Year score. However, you will need to pass selected extended subjects to continue with the standard program. Your final Foundation Year score will be calculated from the standard units.

# MUF1011 Extended: English

## Overview

Extended English has been designed to help you develop your English skills as well as help you to access the specific language you will encounter in your other subjects.

With that in mind, many of the skills that you will encounter in Extended English will be used in your other subjects. These skills include Cornell note-taking, participating in discussions, writing academic paragraphs, collaborating on projects, delivering presentations and writing reflections.

The Extended English course has been designed to prepare you for the Standard Program and to ensure that you have the required language skills to access that curriculum. The minimum English entry requirement for the Standard Program is an IELTS score of 5.5 (with no band lower than 5). However, to help you better access the curriculum, you should be trying to improve your English at every opportunity.

Extended English is organised into three discreet parts that will all contribute to your English proficiency. Firstly, you will be introduced to academic literacy. In this part of the course you will be introduced to note-taking, discussion, academic writing, reflective writing and attribution. In the second part of the course, you will be introduced to the study of fiction and the importance of reading. Finally, you will have a lesson each week that is dedicated to developing vocabulary in your different subjects.

Ideas and Communication is a compulsory unit in Foundation Year Extended.

## Skills and Knowledge Outcomes

At the end of this unit students will be able to:

- Create detailed personal learning and living goals informed by diagnostic testing
- Transfer and use all of the specific language skills taught in English in another context
- Apply Cornell note-taking strategies to summarise material
- Take part in an academic discussion
- Conduct basic research using a library and the internet
- Show understanding and use of core concepts in critical thinking
- Organise their time and learning materials with little assistance
- Explain the reasoning behind references in academic work and be able to complete basic referencing
- Highlight the key requirements of an assessment task and an assessment rubric
- Work in small teams to produce work

## English Language Outcomes

### Speaking

- Perform effectively in English during a prepared presentation
- Participate effectively in groups during discussions of unit related content in English

### Listening

- Listen to and mostly comprehend spoken English including academic language, multimedia texts and classroom instructions
- Use Cornell note-taking strategies to record information from spoken, printed and multimedia texts and show understanding

### Reading

- Use a range of reading strategies to comprehend written texts including printed text, multimedia texts and academic genres
- Identify key information and produce accurate notes and summaries from written and visual texts to demonstrate understanding of key concepts and ideas

### Writing

- Write substantial, coherent and accurate texts following guidelines provided
- Produce short and extended written texts that appropriately respond to timed assessment tasks
- Support views with reference to literature, and by following academic conventions

Assessment Task	
Assessment Task	Weighting
Note-taking Test	10%
Group Discussion	10%
Academic Paragraph Test	10%
Group Presentation	15%
Group Essay	15%
Individual Reflection	10%
Timed Writing	20%
Participation	10%

# MUF1021 Extended: Ideas and Communication

## Overview

Employers want graduates with communication skills, who have the ability to think creatively and critically. Today's students will be working in jobs and industries that don't exist today. The Ideas and Communication course explicitly teaches skills to prepare students for their educational and employment future.

English language skills are a critical and common aspect of student success. The Ideas and Communication course will allow students to transfer and practise the skills they are learning in their English course.

Students are moving into a new educational culture. The Ideas and Communication course helps students to engage, think about and discuss the particular and holistic expectations of Australian education, and living in Australia as an adult. This includes teaching and giving students opportunity to use independent learning skills, including time management and organisational skills. Other skills which will be taught explicitly are; understanding rubrics, interpreting feedback, understanding why we acknowledge sources and the basic method for doing this.

Ideas and Communication is a compulsory unit in Foundation Year Extended.

## Skills and Knowledge Outcomes

At the end of this unit students will be able to:

- Create detailed personal learning and living goals informed by diagnostic testing.
- Transfer and use all of the specific language skills taught in English in another context.
- Apply Cornell note-taking strategies to summarise material.
- Take part in an academic discussion.
- Conduct basic research using a library and the internet.
- Show understanding and use of core concepts in critical thinking.
- Organise their time and learning materials with little assistance.
- Explain the reasoning behind references in academic work and be able to complete basic referencing.
- Highlight the key requirements of an assessment task and an assessment rubric.
- Work in small groups to produce work.

## English Language Outcomes

### Speaking

- Participate effectively in team work.
- Participate effectively in structured discussion.

### Listening

- Listen to and mostly comprehend spoken English including academic language, multimedia texts and classroom instructions.

### Reading

- Identify key information and produce accurate notes and summaries from written and visual texts to demonstrate understanding of key concepts and ideas.

### Writing

- Write substantial, coherent and accurate texts following guidelines provided.
- Support views with reference to literature, and by following academic conventions.

Assessment Task	
Assessment Task	Weighting
Socratic Seminar 1 (Preparation)	10%
Socratic Seminar 2 (Participation)	10%
Critical Writing	10%
PBL - Project Peer Critique	10%
PBL – 750 Word Essay	30%
PBL – Project Presentation	20%
Overall Classroom Participation	10%

# MUF1031 Extended: Foundations for Calculus

## Overview

This course explores the properties of a wide range of functions and their graphs, as well as rates of change. Applications of these properties and processes are an important part of this unit. In this course, students will develop the critical, logical and communicative skills to solve real world problems using higher order mathematical concepts.

## Skills and Knowledge Outcomes

At the end of this unit students will be able to:

- Recall mathematical facts related to linear and non-linear algebra, trigonometry, and rates of change
- Recall the properties of the functions in this unit, sketch their graphs and be familiar with their properties
- Solve polynomial, exponential, logarithmic and trigonometric equations (including equations with tangent), and applications in word problems
- Interpret and use algebra to solve problems based in a variety of contexts and posed in language of some complexity
- Calculate average and instantaneous rates of change, including the use of the differentiation process for the functions relevant to this unit
- Apply differentiation techniques in the solution of problems
- Use differentiation for curve sketching
- Use problem solving strategies such as: partitioning problems into sub-problems to simplify and organise the investigation process, identifying and working on related problems, and checking validity of answers
- Communicate arguments and strategies, when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Apply knowledge in both routine and non-routine questions
- Work independently, and as an effective member of a team, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Interpret mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate awareness of different ways of thinking and problem solving in contexts involving graphs and functions.
- Demonstrate proficiency in the use of tools such as graphics calculators, spreadsheets and other technologies
- Analyse mathematical situations in order to draw conclusions and make predictions

- Collaborate and cooperate, challenge the reasoning and perspectives of others, and contribute mathematical learning to investigations involving a range and balance of situations from life-related to purely mathematical.

## English Language Outcomes

At the end of this unit students will be able to:

### Speaking

- Participate effectively in pairs or groups during mathematical discussions of unit related content in English
- Perform effectively in English during mathematical explanations in front of peers

### Listening

- Listen to and mostly comprehend spoken English including mathematical reasoning, multimedia, classroom instructions and activities.

### Writing

- Demonstrate ability to precisely explain mathematical reasoning in short answer, and analysis form
- Demonstrate ability to extract key mathematical ideas and vocabulary and articulate in written notes

### Reading

- Use a range of reading strategies to assist comprehension of written mathematical texts.
- Interpret written text to further mathematical understanding.
- Demonstrate ability to extract key vocabulary and ideas from a written text.

Assessment Task	
Assessment Task	Weighting
Indices and Logarithms Test	20%
Parabolas and Cubics Test	10%
Circular Functions Test	20%
Group Project	10%
Participation	10%
Cumulative Test	30%

# MUF1041 Extended: Mathematics in Context

## Overview

This course is preparation for the Fundamental Mathematics units, which develop mathematics skills that can be applied in the world around.

It will introduce students to the basic skills that will be built upon in Units 1 and 2 of Fundamentals. These include understanding relationships, developing financial awareness and analysing data.

## Skills and Knowledge Outcomes

At the end of this unit students will be able to:

- Define and explain concepts and techniques related to linear relations, data analysis, sequences and financial arithmetic
- Identify and apply specified methods for organising, displaying and summarising datasets
- Apply related mathematical concepts and techniques to solve problems involving linear relations, data analysis, sequences and financial arithmetic
- Communicate arguments and strategies, when solving problems, using appropriate mathematical language
- Use mathematical knowledge to solve problems set in 'real world' contexts
- Choose and use technology appropriately and efficiently
- Work independently, and as an effective member of a team, to solve mathematical problems
- Communicate mathematical ideas using relevant vocabulary and symbols
- Interpret mathematical information, and ascertain the reasonableness of solutions to problems
- Demonstrate awareness of different ways of thinking and problem solving in contexts involving linear relations, data analysis, sequences and financial arithmetic
- Demonstrate proficiency in the use of tools such as graphics calculators, spreadsheets and other technologies

## English Language Outcomes

At the end of this unit students will be able to:

### Speaking

- Participate effectively in pairs or groups during mathematical discussions of unit related content in English
- Perform effectively in English during mathematical explanations in front of peers.

### Listening

- Listen to and mostly comprehend spoken English including mathematical reasoning, multimedia, classroom instructions and activities.

### Writing

- Demonstrate ability to precisely explain mathematical reasoning in short answer, and analysis form.
- Demonstrate ability to extract key mathematical ideas and vocabulary and articulate in written notes.

### Reading

- Use a range of reading strategies to assist comprehension of written mathematical texts.

Assessment Task	
Assessment Task	Weighting
Linear Relations Test	20%
Data Analysis Group Task	10%
Data Analysis Online Test	10%
Sequences Online Test	10%
Financial Arithmetic Test	10%
Participation	10%
Cumulative Test	30%

# MUF1051 Extended: Chemistry and Life

## Overview

Chemistry and Life is designed to provide students with the understanding of key concepts in Chemistry to help students progress to Chemistry and Biology in the standard program. Chemistry and Life will develop written and verbal communication skills within the Chemistry classroom.

## Skills and Knowledge Outcomes

At the end of this unit students will be able to:

- Demonstrate an understanding of the language of Chemistry
- Demonstrate an understanding of matter, atomic structure and the Periodic Table
- Calculate atomic mass, molar mass, number of moles and number of particles of a substance
- Develop an understanding of primary bonding and secondary bonding and relate structure of a molecule to polarity
- Determine percentage composition, empirical and molecular formulas
- Demonstrate an understanding of the properties of water, solubility, precipitation and acid/base reactions. Calculate concentration and pH of a solution
- Demonstrate an understanding of the properties of gases and gas calculations
- Demonstrate an understanding of redox reactions and assigning redox numbers
- Name simple organic compounds and demonstrate an understanding of monomers and polymers
- Solve stoichiometric calculations involving mass, solutions and gases
- Demonstrate an understanding of the energy involved in chemical reactions and thermochemical equations
- Work independently or as a team to achieve outcomes
- Present data or other scientific information using an appropriate format
- Apply chemical and general scientific knowledge to analyse and solve problems using appropriate chemical models, equations and calculations
- Collect, record and analyse qualitative and quantitative data
- Communicate scientific concepts in written and oral format
- Comply with safety guidelines within the laboratory.

## English Language Outcomes

At the end of this unit students will be able to:

### Speaking

- Effectively communicate scientific concepts to peers
- Participate effectively in group work, including classroom and laboratory activities

### Listening

- Comprehend and follow instructions for classroom and laboratory activities
- Use note-taking skills from aural texts

### Reading

- Comprehend written material provided, including online material, questions and laboratory instructions
- Produce summaries from written text provided

### Writing

- Demonstrate an ability to write short explanations for scientific concepts
- Demonstrate an ability to write experimental reports using appropriate conventions

*For a list of skills required for English language outcomes, see the FY Unit Guide.*

Assessment Task	
Assessment Task	Weighting
Participation	10%
Online Quizzes	10%
Practical Assessment (3 x 10% each)	30%
Research Project	20%
Tests (3 x 10% each)	30%

# MUF1061 Extended: Business Enterprise

## Unit Overview

Business Enterprise provides an introductory framework for students to collaborate, innovate, problem solve and celebrate their experience of running a small business. This is an opportunity for students to be immersed in the language, concepts and real world experience of business. Students will learn about the introductory concepts of commerce, and then be guided to form their own team and run their own small business that will sell products to earn revenue.

## Skills and Knowledge Outcomes

At the end of this unit students will be able to:

- Identify and describe goods and services, and needs and wants
- Describe a trading business
- Explain the characteristics of effective teams
- Describe the types of economic sectors
- Explain and compare different ownership structures
- Explain characteristics of entrepreneurs
- Identify and describe factors to consider when choosing a business name
- Describe the difference between a vision, a mission and an objective
- Explain the relationship between a logo and a business name
- Identify and describe factors which influence the choice of business location
- Explain the impact of these factors on the business decision
- Describe a business idea, activity and ownership structure
- Identify and provide examples of the factors to be considered when designing a product
- Define and provide examples of key terms related to business functions
- Evaluate the marketing and financial impact of a product design
- Define and provide examples of the four components of SWOT analysis
- Define and provide examples of PEST analysis
- Create a final product design for a business start-up
- Define and explain the marketing mix
- Identify and describe a target market
- Apply the marketing mix and develop a marketing plan
- Calculate and graph break even data
- Identify and explain why source documents are important source documents
- Analyse break even data to complete the financial planning.

## English Language Outcomes

At the end of this unit students will be able to:

### Speaking

- Communicate effectively in English during class activities.
- Participate effectively in the group during academic discussions of unit related content in English.

### Listening

- Listen to and mostly comprehend spoken English.
- Use Cornell note-taking strategies to summaries concepts.

### Writing

- Demonstrate application of theories studied through reference to examples.
- Produce short coherent written texts that appropriately respond to timed exam questions.

### Reading

- Use a range of reading strategies to assist comprehension of written texts including industry case-studies, academic and multimedia genres.
- Identify key information and produce accurate notes and summaries from written texts to demonstrate an understanding.

Assessment Task	
Assessment Task	Weighting
Multiple-choice quizzes (3 x 10%)	30%
Group Video Diaries (2 x 5%)	10%
Team Enterprise Project (TEP) Part 1	20%
Team Enterprise Project (TEP) Part 2 – Individual	10%
Team Enterprise Project (TEP) Part 2 – Group	20%
Participation	10%