



MONASH UNIVERSITY FOUNDATION YEAR

Subject guide for studies in
Semester 1, 2024

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.*

- [English](#)
- [Accounting](#)
- [Biology](#)
- [Chemistry](#)
- [Information and Communication
Technology \(ICT\)](#)
- [Economics](#)
- [Mathematics](#)
- [Advanced Mathematics](#)
- [Music](#)
- [Physics](#)
- [Global Studies](#)
- [Fundamental Mathematics](#)
- [Contemporary Issues](#)

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](#)
- [Extended: Ideas and Communication](#)
- [Extended: Foundations for Calculus](#)
- [Extended: Mathematics in Context](#)
- [Extended: Chemistry and Life](#)
- [Extended: Business Enterprise](#)

Monash College's Foundation Year course consists of an orientation, in-person classes, exam preparation period, exams and self-directed study. Self-directed study is counted as scheduled course contact hours, it involves activities that are included in the course schedule with designated nominal hours, examples include interactions with/via the learning management system (LMS), quizzes, videos and ebook readings. These activities are scheduled throughout the course and include assessed work that contributes to the learning outcomes and is included in the assessment rubric. They are supervised by teachers who review engagement via LMS logs and analytics, mark the assessment activities and provide feedback, and monitor student completion of these activities via the student's participation in in-class discussions. Completion of these self-directed study activities also contributes to the student's participation mark for the unit.

Note: Individual assessment tasks may be subject to minor changes.

Specific equipment, resources and software packages are required for some units, these are outlined in the individual unit guides and on the Monash College website.

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 of the Foundation Year Programme.

Knowledge and outcomes

At the end of this unit students will know:

- Comprehension, interpretation and communication of written and verbal information
- Referencing techniques and conventions
- Collection, organisation, analysis, synthesis and evaluation of information
- Note-taking, paraphrasing, summarising and synthesis
- Argument and supporting a point of view
- Conventions of academic writing
- The value of feedback and self-reflection in learning
- The importance of academic integrity in an educational setting

Skills and behaviours outcomes

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

- Comprehend, interpret and communicate written and verbal information
- Collaboratively learn through speaking, listening and co-operation
- Apply critical thinking skills and reflective decision-making
- Take responsibility for their learning through self-evaluation and establishing goals

- Demonstrate articulate verbal and written communication using the English language
- Read for gist and read for meaning
- Analyse an argument in oral and written form
- Present and support an argument in oral and written forms
- Take notes, paraphrase, synthesise ideas, cite and reference sources
- Apply the principles of academic integrity and to their own academic conduct

Assessment	
Assessment Task	Weighting
Synthesis Writing	15%
Group Presentation	20%
Individual Reflection	15%
Argumentative Essay	20%
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:

- Comprehension, interpretation and communication of written and verbal information
- Collection, organisation, analysis, synthesis and evaluation-of information
- Exploration and responses to a range of ideas through the study of various texts
- Planning of work and prioritisation of time
- Drafting, editing and proofreading
- Feedback and evaluation of 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 ideas in texts and by researching a challenging topic
- Collaboratively learn through speaking, listening and co-operation
- Take responsibility for their own learning through establishing goals, self-diagnosis and self-evaluation

- Demonstrate articulate oral and written communication using the English language
- Read for meaning
- Plan, structure and revise their writing
- Plan, prioritise and manage their time
- Employ ICT as a mode of research, communication and presentation

Assessment	
Assessment Task	Weighting
Literature Presentation	15%
Research Paper Outline	15%
Research Paper	25%
Video Reflection	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.

Knowledge outcomes

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

- Apply accounting assumptions and qualitative characteristics
- 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
- Explain the role of source documents in the accounting process
- Explain the role of journals in the recording stage
- Explain the role of the General Ledger in the accounting process
- Explain the role and limitations of the Trial Balance
- Define and identify current and non current assets and liabilities
- Define and identify operating, financing and investing activities
- Explain the difference between cash and profit
- Define Cost of Goods Sold, Gross Profit, Other Expenses and Net Profit.

Skills and behaviours outcomes

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

- Calculate owner's equity using the accounting equations
- Apply the rules of double entry accounting
- Record transactions into the appropriate special journal and total special journals
- Record appropriate transactions into the General Journal
- State the effect of transactions on the accounting equation
- Post from journals to ledger accounts
- Balance asset and liability accounts
- Foot owner's equity, revenue and expense accounts
- Prepare a Trial Balance
- Prepare a classified and fully classified Balance Sheet
- Prepare a Cash Flow Statement
- Prepare an Income Statement.

Assessment	
Assessment Task	Weighting
MCQ Quiz (Study Area 1)	10%
Skills & Application Test 1	25%
Skills & Application Test 2	25%
Topic Quizzes & Activities	15%
Group Case Study	25%

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*.

Knowledge outcomes

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

- Apply accounting assumptions and qualitative characteristics
- Explain the role of the stock card and its relationship to the Stock Control account
- Explain and apply First In, First Out (FIFO) assumption to sales of stock
- Explain purchase and sales returns
- Explain the purpose of depreciation of non current assets
- Explain the purpose of Balance Day Adjustments
- Define, identify and classify accrued and prepaid expenses and accrued and prepaid revenues
- Analyse business performance using trends, variances and benchmarks
- Explain profitability, efficiency, liquidity and stability
- Explain possible causes for changes in performance indicators
- Discuss strategies to improve business performance.

Skills and behaviours outcomes

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

- Record transactions in stock cards
- Record stock losses and gains
- 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
- Record and report for accrued and prepaid expenses
- Record and report for accrued and prepaid revenue
- Prepare a Post adjusted Trial Balance
- Interpret accounting information from graphical representations
- Calculate and interpret performance indicators

Assessment	
Assessment Task	Weighting
Group Presentation	15%
Skills & Application Test 1	15%
Skills & Application Test 2	15%
Group Performance Evaluation	15%
Topic Quizzes & Activities	10%
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 Assessment	20%
Research Project	20%
Participation	10%
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 Assessment 1	20%
Practical Assessment 2	20%
Participation	10%
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 Assessment 1	20%
Practical Assessment 2	20%
Participation	10%
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 Assessment	20%
Research Project	20%
Participation	10%
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	10%
Programming Practical Task	10%
Participation	10%
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
MCQ Quiz (Study Area 1)	10%
Skills & Application Task (Study Area 2)	25%
Group Essay	25%
Topic Quizzes & Activities	15%
Skills & Application Task (Study Area 3)	25%

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 & Application Task (Study Area 1)	10%
Group Research Presentation	20%
Research Essay	20%
Skills & Application Task (Study Area 3)	10%
Topic Quizzes & Activities	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).

MUF0091 may be taken sequentially with MUF0142 to create a unit sequence accepted by Monash University (selected faculties) as equivalent to a Fundamental Mathematics Unit 1 and 2 sequence. To be eligible for this sequence, a student must achieve a MUF0091 score of at least 50%. The score obtained for MUF0091 will not be used in the calculation of the Fundamental Mathematics unit sequence score. The score obtained for MUF0142 will be used as the score for the MUF0091 and MUF0142 sequence. The score for MUF0091 will not be used in the Fundamental Mathematics sequence calculation or in the Foundation Year score calculation. This sequence satisfies the Foundation Year completion rules with a 7 unit score calculation.

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%

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%

MUF0111 Music Unit 1: Developing Performance Technique and Music Language

Prerequisites

Before undertaking Monash University Foundation Year Music Unit 1, it is recommended pianists and instrumental students will have completed a minimum practical instrumental level of ABRSM Grade 6 or equivalent level in other programs, such as Trinity Guildhall, AMEB or the China music programs. It is recommended Singers will have some prior choral experience; the ability to read music would be very beneficial.

Knowledge outcomes

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

- Perform technical works (scales, arpeggios and exercises) fluently and accurately.
- Demonstrate a variety of music techniques and styles appropriate to the chosen periods or genre.
- Demonstrate an understanding of music theory at a grade level commensurate with an individual's standard of performance and reflecting previous study of theory.
- Analyse rehearsals and performances and demonstrate the ability to be self-critical with a view to improving areas which require further practice.
- Use technology to record and play-back rehearsals and performances.
- Develop an understanding of how to collect, organise, analyse, synthesise and evaluate information.
- Develop solo performing skills.
- Understand the value of feedback and self-reflection informing the learning process.

Skills and behaviours outcomes

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

- Understand their own identity as a developing performing musician and realise the value and importance of their own interpretation of selected musical works.
- Communicate as a performing musician, with a range of audiences, including peers, teachers and the wider community, to achieve confidence and fluency in performance.
- Understand the importance and value of regular practice in terms of developing their instrumental performance skills.
- Interact with other people – individually and in groups – in a variety of music making activities.
- Research performance techniques and present and perform findings in a multimedia format.
- Recognise, identify and transcribe rhythm and pitch.
- Understand the relationship between theoretical notation and sound.
- Critically evaluate their own performances of music - both informal and formal - and make changes to interpretation where necessary.

Assessment	
Assessment Task	Weighting
Performance Technique Research Assignment	20%
Program Notes	15%
Technical Work	15%
Theory	10%
Aural	10%
Final Examination	30%

MUF0112 Music Unit 2: Developing Music Practice and Performance

Prerequisites

As this unit is seen as the second part of a two-part sequence of study, it is recommended students will have completed *MUF0111 Music Unit 1: Developing Performance Technique and Stylistic Appreciation* prior to commencing Unit 2. The prerequisites for the unit are that pianists and instrumentalists are anticipated to have attained a minimum level of ABRSM Grade 6 or equivalent levels in other programs – Trinity Guildhall, AMEB or China music programs. Singers need no pre-requisite levels, however, some prior choral experience would be beneficial, as would the ability to read music. All performers are expected to be able to demonstrate considerable progress in technical skills, gained in Unit 1, to support the solo performance requirements of this second unit. It is assumed that all students commencing this unit will have a good working knowledge of the theory of music and some aural ability.

Knowledge outcomes

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

- Perform exercises and technical works related to the selected solo performance program, fluently and accurately.
- Perform the three selected solo works accurately, effectively and with an awareness of the differing styles and varying musical requirements.
- Demonstrate an understanding of music theory at a grade level commensurate with an individual's standard of performance and reflecting previous study of theory
- Analyse rehearsals and performances and demonstrate the ability to be self – critical with a view to improving any areas which require further practice.
- Develop an understanding of how to collect, organise, analyse, synthesise and evaluate information and to present a written assignment of Program Notes, related to the three works selected for the Solo Performance program.
- Perform the selected solo repertoire in recitals and concerts, as well as in the final examination situation, in a musical manner, and with an understanding of the stylistic differences between the works.
- Understand the value of feedback and self-reflection in the learning process.
- Use technology to record and play-back rehearsals and performances.
- Demonstrate an understanding of the structure of each selected piece and discuss the biographical and compositional information and other information relevant to its interpretation.

Skills and behaviours outcomes

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

- Understand their own identity as a developing performing musician and realise the value and importance of their own interpretation of selected musical works.
- Communicate as a performing musician, with a range of audiences, including peers, teachers and the wider community, to achieve confidence and fluency in performance.
- Understand the importance and value of regular practice in terms of developing their instrumental performance skills.
- Explore the elements of music, style and notation to compose music for film.
- Recognise, identify and transcribe rhythm and pitch.
- Understand the relationship between theoretical notation and sound.
- Critically evaluate their own performances of music - both informal and formal - and make changes of interpretation where necessary.

Assessment	
Assessment Task	Weighting
Film Music Composition Task	20%
Program Notes	15%
Technical Work	15%
Theory	10%
Aural	10%
Final 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 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	15%
Practical Report 2	15%
Research Project	15%
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 waves, electricity and magnetism, and modern Physics
- 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	15%
Practical Report 2	15%
Research Project	15%
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. Unit 1 and 2 cannot be taken concurrently in the first semester or until English Unit 1 has been successfully completed. Based on this, it is not possible to study Unit 2 in the first semester.

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 globalization.
- 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 globalization.

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 Concepts Test and Short Answer Response	15%
United Nations Presentation and Debate	20%
Group Investigation and Student Led Seminar	20%
Socratic Seminar	15%
Written Report	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. Unit 1 and 2 cannot be taken concurrently in the first semester or until English Unit 1 has been successfully completed. Based on this, it is not possible to study Unit 2 in the first semester.

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
Global Cultures Group Presentation	15%
Extended Written response	10%
Human Rights Student Led Seminar	30%
Socratic Seminar: Reactions to Globalisation	15%
Research Essay	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

Overview

Contemporary Issues explores current world issues and how they affect people and places. Unit 1 focuses on the challenges of creating sustainable societies and how this relates to social, economic and environmental factors. By exploring a range of case studies at different scales (global, national and local) you will develop a deeper understanding of the issues facing humanity and the ways they could be resolved. This unit will help you to develop your research skills, use evidence as well as improve your communication, critical thinking and collaboration skills. You will study either:

Module 1: Health and Sustainability

Or

Module 2: Environmental Sustainability

Prerequisites

While Contemporary Issues Unit 1 can be completed without completing Contemporary Issues Unit 2, 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 analyse contemporary issues using the issues based learning framework of Local/National/Global.
- Demonstrate critical thinking strategies by interpreting, analysing and evaluating a variety of contemporary issues and case studies in relation to the pillars of sustainability: political, social, economic and environmental aspects and implications.
- Identify and articulate how contemporary issues in the world are connected to the personal experience of others as well as their own lives.
- 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 and referencing and acknowledgement appropriate to the university environment.

Skills and behaviours outcomes

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

- 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 issues based on evidence from a range of sources.
- Apply knowledge to work respectfully and 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, leading presentations and participation in group discussion.
- Use feedback to monitor and improve learning.

Assessment	
Assessment Task	Weighting
Socratic Seminar 1	20%
Group Investigation and Student Led Seminar	30%
Written Report	30%
Socratic Seminar 2	20%

MUF0152 Contemporary Issues Unit 2

Overview

Contemporary Issues explores current world issues and how they affect people and places. Unit 2 focuses on the causes and consequences of key challenges in the world and how societies respond to solve them. This unit 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. You will study either:

Module 1: Conflict

Or

Module 2: Inequality

Prerequisites

While Contemporary Issues Unit 1 can be completed without completing Contemporary Issues Unit 2, 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 analyse contemporary issues using the issues based learning framework of Causes/Consequences/Responses.
- Demonstrate critical thinking strategies by interpreting, analysing and evaluating a variety of contemporary issues and case studies.
- Link the case studies covered in class to important theoretical ideas
- Identify and articulate how contemporary issues in the world are connected to the personal experience of others as well as their own lives.
- Understand how to be critical consumers of media, especially in relation to the reporting and discussion of various contemporary issues and topics.
- 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.

Skills and behaviours outcomes

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

- 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 bias within media reporting of key issues/events.
- Apply knowledge to work respectfully and 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, leading presentations and participation in group discussion.
- Use feedback to monitor and improve learning.

Assessment	
Assessment Task	Weighting
Weekly Reading Task and Written Component	25%
Group Investigation and Student Led Seminar	30%
Essay	30%
Socratic Seminar	15%



MONASH UNIVERSITY FOUNDATION YEAR Extended

Subject guide for studies in
Semester 1, 2024

Extended Program

Extended Requirements

All Extended units require a pre-requisite 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 and help you learn specific terminology language you may encounter in other subjects.

Many skills that you encounter in Extended English will be used in 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 required language skills of the Standard Program curriculum. The minimum English entry requirement for the Standard Program is an IELTS score of 5.5 (with no band lower than 5). To help you complete the curriculum, you should be practising speaking and writing in English at every opportunity.

Extended English is in three parts. First, is academic literacy. You are introduced to note-taking, discussion, academic writing, reflective writing and attribution. The second part of the course, is the study of fiction and the importance of reading. Finally, you will have a lesson each week that is dedicated to developing vocabulary for your other subjects.

Skills and Knowledge Outcomes

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

- Create personal learning goals informed by diagnostic testing
- Transfer and use specific language skills taught in English in other contexts
- Apply note-taking strategies to summarise material
- Take part in academic discussion
- Conduct basic research using library and internet resources
- Show, understand and use of concepts of critical thinking
- Organise their time and learning materials
- Explain referencing in academic work and complete basic referencing
- Highlight key requirements of assessment tasks and assessment rubrics
- Work in small teams to produce work

English Language Outcomes

Speaking

- Perform an effective prepared presentation in English
- Participate in effective group discussions of unit content in English

Listening

- Listen to and generally 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 reading strategies to comprehend texts including print, multimedia and academic genres
- Identify key information and produce accurate summaries from written and visual texts to demonstrate understanding

Writing

- Write substantial, coherent and accurate texts following guidelines
- Produce short and extended written texts in response to timed assessment tasks
- Support views with reference to texts, and by following academic conventions

Assessment Task	
Assessment Task	Weighting
Note-taking	10%
Group Discussion	10%
Academic Paragraph Test	15%
Group Presentation	15%
Group Essay	15%
Individual Reflection	10%
Timed Writing	25%

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 Preparation	15%
Socratic Seminar Participation	20%
Critical Writing	15%
Project Based Learning Essay	30%
Project Based Learning Presentation	20%

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 summarise 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 Diary	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%