



VCE INDUCTION PACKAGE 2022

UNITS 3 AND 4

Mathematical Methods 3/4



Welcome letter

Dear students,

Welcome to Mathematical Methods (Study) Units 3 and 4.

If you are well organised, motivated and have a good work ethic, you will have an enjoyable and successful year in Mathematical Methods.

In order to get the most out of this course, there are a number of things that we strongly suggest that you do over the summer and continue throughout 2019.

1. Complete the holiday homework by the due date.
2. Familiarise yourself with the detailed course outline provided in this package and retain your prior knowledge from Years 7-11.
3. Develop a good working relationship with your class teacher and maintain regular communication with them throughout the year.
4. Develop a study timetable that will assist you in meeting the work deadlines.
5. Ensure that you become familiar with the resources (prescribed textbook, websites, notes, other textbooks)
6. Visit the VCAA website regularly to familiarise yourself with past examination papers and to read the examiners' reports: www.vcaa.vic.edu.au
7. Communicate with students who have studied the subject in previous years to get their perspective and suggestions for success.
8. Ensure that you have a balanced life that consists of schoolwork, exercise, sport, leisure, rest and a healthy diet.

If you have any queries about the course, please contact me at school or by email.

On behalf of the Mathematical Methods Study staff, we wish you all the best for your studies next year.

Regards,

Ms. Neilson, Mr. Shannon, Mr. Paragreen and Mr. Spiezia 🍌

Email addresses/Staffroom locations of Staff teaching subject

NAME OF TEACHER	EMAIL ADDRESS	LOCATION
Jeremy Shannon	shannonj@vermontsc.vic.edu.au	Senior Student Managers Office
Rosemary Neilson	neilsonr@vermontsc.vic.edu.au	Senior Administration Office
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Chris Paragreen	paragreenc@vermontsc.vic.edu.au	Maths Staff room

Outline of Study Design

OUTLINE OF STUDY

Mathematical Methods (CAS) Units 3 and 4 consists of the following areas of study: 'Functions and graphs', 'Calculus', 'Algebra' and 'Probability', which must be covered in progression from Unit 3 to Unit 4, with an appropriate selection of content for each of Unit 3 and Unit 4.

The selection of content from the areas of study should be constructed so that there is a development in the complexity and sophistication of problem types and mathematical processes used (modelling, transformations, graph sketching and equation solving) in application to contexts related to these areas of study.

Students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, algebraic manipulation, equation solving, graph sketching, differentiation and integration with and without the use of technology, as applicable. Students should be familiar with relevant mental and by hand approaches in simple cases.

The appropriate use of computer algebra system technology (CAS) to support and develop the teaching and learning of mathematics, and in related assessments, is to be incorporated throughout the course. This will include the use of computer algebra technology to assist in the development of mathematical ideas and concepts, the application of specific techniques and processes to produce required results and its use as a tool for systematic analysis in investigative, problem-solving and modelling work.

For each unit the student is required to demonstrate achievement of three outcomes. As a set these outcomes encompass all of the selected areas of study for each unit. For each of Unit 3 and Unit 4 the outcomes apply to the content from the areas of study selected for that unit.

Outcome 1

On completion of each unit the student should be able to define and explain key concepts as specified in the content from the areas of study, and apply a range of related mathematical routines and procedures.

Outcome 2

On completion of each unit the student should be able to apply mathematical processes in non-routine contexts, and analyse and discuss these applications of mathematics.

Outcome 3

On completion of each unit the student should be able to select and appropriately use a computer algebra system and other technology to develop mathematical ideas, produce results and carry out analysis in situations requiring problem-solving, modelling or investigative techniques or approaches.

Key Dates/Timelines of Topics, Outcomes and Activities Assessment Dates 2022

Unit 3 – Mathematical Methods

Task	Date	Length	Marks
Application Task (Chapters 1, 2, 3, 4, 7 & 9)	Term 2 Weeks 4, 5 & 6		(50 marks)
Parts 1 & 2 Investigation: Part 1 – Homework Task Part 2 – In Class Group Task	Mon 16 th – Fri 20 th May	1 period (in class)	20 marks
Part 3 - Authentication Test 1	Wed May 25 th	1 period (Wed pm)	15 marks
Part 4 - Authentication Test 2	Wed June 1 st	1 period (Wed pm)	15 marks

Unit 4 – Mathematical Methods

Task	Date	Length	Marks
Modelling/Problem Solving Task 1: (Chapters 1 – 11)	Week 3 Term 3 Wednesday 27 th July	2 periods (Wed pm)	25 marks
Modelling/Problem Solving Task 2: Probability	Week 9 Term 3 Wednesday 7 th September	2 periods (Wed pm)	25 marks

Note: These dates may alter according to constraints set by the college

Timeline of Topics

See calendar (Scope and Sequence) handed out in class.

Assessment

UNIT 3 and 4 COURSEWORK AND SAC REQUIREMENTS

In order to successfully pass a Unit, all students are required to;

- complete all set coursework.
- obtain a satisfactory standard in all scheduled School-assessed Coursework (SaCS).

Where a student does not clearly pass a SaC they will be given the opportunity to redeem the task in order to reach a satisfactory standard, however where this occurs the students will retain their original mark for VCAA purposes.

All students are required to be up to date with their coursework prior to sitting a SaC.

Assessment of levels of achievement

The student's level of achievement for Units 3 and 4 will be determined by school-assessed coursework and two end-of-year examinations.

Contribution to final assessment

School-assessed coursework for Unit 3 and 4 will contribute 34 per cent to the study score.

Units 3 and 4 will also be assessed by two end-of-year examinations, which together will contribute 66 per cent to the study score.

End-of-year examinations

The student's level of achievement for Units 3 and 4 will also be assessed by two examinations based on tasks related to Outcomes 1 to 3.

Examination 1

Description

Students are required to respond to a collection of short-answer and some extended-answer questions covering all areas of study in relation to Outcome 1. The task is designed to assess students' knowledge of mathematical concepts, their skills in carrying out mathematical algorithms and their ability to apply concepts and skills in standard ways without the use of technology.

All questions are compulsory.

Students will complete the examination using a structured answer booklet.

Conditions

The task will be completed under the following conditions:

- Duration: one hour.
- No calculators, CAS or notes of any kind are permitted. A sheet of formulas will be provided with the examination.

Contribution to final assessment

The examination contributes 22 per cent to the study score.

Examination 2

Description

Students are required to respond to a collection of multiple-choice questions and extended-answer questions covering all areas of study in relation to all three outcomes, with an emphasis on Outcome 2.

Student access to an approved CAS will be assumed by the setting panel.

The task is designed to assess students' ability to understand and communicate mathematical ideas, and to interpret, analyse and solve both routine and non-routine problems. Students should attempt all of the multiple-choice questions in Part I of the examination and all of the extended-answer questions, involving multi-stage solutions of increasing complexity in Part II of the examination.

All questions are compulsory.

Students will complete the examination using a structured answer booklet.

Conditions

The task will be completed under the following conditions:

- Duration: two hours.
- An approved CAS and **one** bound reference, text (which may be annotated) or lecture pad, may be brought into the examination. A sheet of formulas will be provided with the examination.

Contribution to final assessment

The examination contributes 44 per cent to the study score.

Sources of support for the Study

Useful Websites

VCAA

www.vcaa.vic.edu.au

The Mathematical Association of Victoria

www.mav.vic.edu.au

Classpad Help Series

<http://www.classpad.com.au/>

Materials Required – Texts, Stationery, and other Resources

Required Materials to be brought to each class

- Writing materials
- 'Cambridge Senior Mathematics, Mathematical Methods Units 3&4'
- Casio ClassPad (CP400) CAS Calculator
- Bound workbook for class work
- Display Folder for handouts
- **Good quality non-spiral bound reference book for notes which may be used in all assessment tasks (Reference Book)**
- Commitment and dedication

Holiday Tasks to be completed in preparation for the beginning of the 2022 school year

This will cover Chapter 2.

Students to receive

- Copy of booklet “Linear functions”.
- Matrices Question Booklet
- Past Exam Questions Booklet for Chapter 2 Linear Functions.

Students are expected to work through the booklet “Linear Functions” completing all work specified. Students are also expected to attempt the “Past Exam Questions Booklet”.

Students will need to access text Chapter 2 ‘Coordinate Geometry and Matrices’ and worked solutions from MS Teams or Moodle.