LAVALLA
CATHOLIC COLLEGE

Area of Study

Mathematics

2020 Handbook

Contents

Why study Mathematics?

Mathematics is a compulsory Year 10 subject. Students will continue with Core Mathematics and those wishing to undertake VCE Mathematical Methods in Year 11 are strongly recommended to choose the elective "Introduction to Maths Methods" as an additional Maths subject in Year 10.
All further study and career pathways need a sound command of Mathematics and Numeracy.
Studies in Mathematics improve student skills in numeracy but also develop skills in:

- Problem solving
- Critical thinking
- Written and oral communication
- Reasoning
- Enquiry
- Team work and leadership
- Use of technology to represent data and numbers

Pathway Information

Year 10		Year 11		Year 12
	↗	VCAL Numeracy		VCAL Numeracy
	↗	Foundation Mathematics Units 1 & 2		
Mathematics			↘	
	↘	General Mathematics Units 1 & 2	→	Further Mathematics Units 3 & 4
↓	↘		↗	
elective Introduction to Maths Methods	→	Mathematical Methods Units 1 & 2	→	Mathematical Methods Units 3 & 4
		↓		↓
		Specialist Mathematics Units 1 & 2	→	Specialist Mathematics Units 3 and 4

Key

↗	Year 10 Mathematics leads to the full range of senior Mathematics options.	↓	These subjects must be taken together
↗		→	This is the recommended prerequisite and pathway
↘		↘	This pathway is possible and the student will be non scored in Units 3 & 4
↘		↗	This is a possible pathway

Year 10 Curriculum

Where does Mathematics lead to?

Year 10 Mathematics leads to VCE courses in:

1. VCE Foundation Mathematics
2. VCE General Mathematics
3. VCE Mathematical Methods
4. VCE Specialist Mathematics.

Projected Maths Pathway Level at end of Year 10	Recommended VCE Maths course
Below Level 8	Foundation Mathematics
Level 8 and above	General Mathematics
Level 9 and above	Mathematical Methods
Level 10 and above	Specialist Mathematics (must be studied in conjunction with Mathematical Methods)

Mathematics A & B

Semester: Semesters 1 & 2
Teacher: Ms Murrell or Mrs Sutton

Course Content:
All Year 10 students will study Mathematics Core for 2 semesters. Students will be prepared for VCE General Mathematics or VCE Foundation Mathematics by completing Mathematics Core in Year 10.

Students wishing to study Mathematical Methods or Specialist Mathematics at VCE will undertake Mathematics Core combined with the elective "Introduction to Maths Methods".

Introduction to Mathematical Methods

Semester: Semester Long
Teacher: Ms Murrell or Mrs Sutton

Course Content:
It is recommended that students have a Maths Pathway level at least 7.5 mid-way through Year 9, to study this elective when they are in Year 10. Students are encouraged to seek recommendation from their Year 9 Mathematics teacher and/or Mathematics staff at the Kildare Campus prior to enrolling in this subject. Some of the assumed skills and knowledge areas include linear algebra, inverse operations, factorising, trigonometry, Pythagoras' theorem, plotting Cartesian coordinates and working diligently with directed numbers. During Year 10 students will become proficient in the use of a summary book and will complete regular skills practice, according to their needs. Evidence of competence in this unit will be demonstrated through regular and varied assessment tasks.
CAS calculator use is integrated throughout the course.

Additional Information:
This Unit is strongly recommended for students wishing to enrol in VCE Mathematical Methods at Year 11 and 12. Mathematical Methods may lead to the study of a university and/or TAFE course such as computer science, health sciences, general sciences, sport sciences, medicine or engineering and many more.
Student wishing to study VCE Specialist Mathematics must also enrol in VCE Mathematical Methods. Study in Mathematical Methods requires a higher level of Mathematical skills.

VCE Curriculum, Year 11

Foundation Mathematics Units 1 & 2

Semester: Semesters 1 & 2
Teacher: Mr Eagle or Ms Murrell

Recommended Previous Studies:
Students below Maths Pathways Level 8 projected at the end of Year 10 are recommended to undertake VCE Foundation on advice from their Maths Teacher.

Course Content:
Foundation Mathematics provides the continuing Mathematical development of students entering VCE, who need basic mathematical skills to support other VCE subjects, including VET studies.

In Foundation Mathematics there is a strong emphasis on using Mathematics in practical contexts relating to everyday life, recreation, work and study. These units will be especially useful for students undertaking VET studies.

Students are encouraged to use appropriate technology in all areas of their study.

The areas of study for Units 1 & 2 of Foundation Mathematics are 'Space, shape and design', 'Patterns and number', 'Data' and 'Measurement'. Students will study a variety of areas of personal interest and access and develop mathematical skill through this. Mathematical concepts taught in context will include geometry, number operations, number patterns, fractions, collecting and analysing data and measurement.

Assessed Coursework:
During this unit, student progress will be monitored and assessed through the use of:

- Presentation Projects
- Classwork
- Application Tasks
- Communication of Mathematics

Additional Information:
Foundation Mathematics is only available at Units 1 & 2 and does not provide a pre-requisite for University entry. Foundation Mathematics is compatible with a VCAL pathway at Years 11 and 12.

General Mathematics Units 1 & 2

Semester: Semesters 1 & 2
Teacher: Mr Eagle, Ms Murrell, Mr Williams or Mrs Illipparampil

Recommended Previous Studies:
Students are recommended to be at Maths Pathway Level 8 (projected to the end of year 10) to undertake VCE General Mathematics. Students electing to complete General Mathematics together with Campus VET subjects are recommended to discuss this with Mr Szkwarek, or Mrs Brown (VCE Coordinator).

Course Content:
Satisfactory completion of General Mathematics Units 1 & 2 will enable the students to take Further Mathematics Units 3 & 4 in Year 12. Some universities accept a pass in General Mathematics Units 1 & 2 as a prerequisite to courses.

General Mathematics Units 1 & 2 consists of the following areas of study: Statistics, Discrete Mathematics (matrices and networks), Arithmetic and number (including financial arithmetic), Algebra and structure, Graphs (Linear and Nonlinear) and Measurement.

Assessed Coursework:
During this Unit, student progress will be monitored and assessed through the use of:

- Tests
- Classwork
- Application Task
- Skills Exercises

Additional Information
Students need a TI~Nspire CX CAS calculator.

Mathematical Methods Units 1 & 2

Semester: Semesters 1 & 2
Teacher: Ms Murrell or Mr Rathbone

Recommended Previous Studies:
Students are recommended to be at Math Pathways Level 9 (projected to the end of year 10), have completed Introduction to Maths Methods to a satisfactory standard and be recommended by their current Mathematics teacher.

It is strongly recommended that students do not undertake a VET course whilst they are studying Mathematical Methods.

Course Content:
VCE Mathematical Methods Units 1 & 2 are intended as preparation for Mathematical Methods Units 3 & 4.
It is also intended for students interested in pursuing mathematical studies at a higher level (e.g. Specialist Mathematics, Computer Science, Physics, Chemistry and Engineering).

Each Unit is one semester in length and each Unit is independently assessed. The areas of study for Units 1 & 2 are Functions and graphs (including power functions, logarithmic functions, exponential functions and circular functions), Algebra, Calculus and Probability and Statistics.

Students select and use the numerical, graphical, symbolic and statistical functions of CAS technology to develop mathematical ideas, produce results and conduct analyses requiring problem solving, modelling or investigative techniques.

Assessed Coursework:
During these Units, student progress will be monitored and assessed through the use of:

- Homework Tasks
- Assignments
- Topic Tests
- Application Task
- Exam

Additional Information:
Students will need a TI~Nspire CX CAS calculator. VCE General Mathematics Units 1 & 2 may be taken in conjunction with Mathematical Methods Units 1 & 2.

Specialist Mathematics Units 1 & 2

Semester: Semesters 1 & 2
Teacher: Mrs Nainie

Recommended Previous Studies:
Successful completion of Year 10 Introduction to Mathematical Methods. Students are recommended to have completed Maths Pathway Level 10 (projected to the end of Year 10).

It is strongly recommended that students do not undertake a VET course whilst they are studying Specialist Mathematics.

Course Content:
VCE Specialist Mathematics Units 1 & 2 provides a strong foundation in mathematics for those students wishing to undertake studies in VCE Specialist Mathematics Units 3 & 4.
Students undertaking this course of study MUST be enrolled in VCE Mathematical Methods.
The areas of study for VCE Specialist Mathematics Units 1 & 2 include topics such as Algebra and structure, Arithmetic and number, Geometry, measurement and trigonometry, Graphs of linear and non-linear functions, Discrete mathematics, Statistics.

Assessed Coursework:
During these Units, student progress will be monitored and assessed through the use of:

- Homework tasks
- Assignments
- Exam
- Application tasks
- Topic tests

Additional Information:
Students require a TI~Nspire CX CAS calculator.
VCE Specialist Mathematics Units 1 & 2 must be taken in conjunction with Mathematical Methods CAS Units 1 & 2.

VCE Specialist Mathematics Units 1 & 2 is required study for students wishing to undertake Specialist Mathematics Units 3 & 4.

VCE Curriculum, Year 12

Further Mathematics Units 3 & 4

Semester: Semester 1 & 2
Teacher: Mrs Illipparampil, Ms Murrell, Mr Zhu Mr Judd or Mr Williams

Recommended Previous Studies:
Successful completion of General Maths Units 1 & 2 or Mathematical Methods Units 1 & 2.

Course Content:
VCE Further Mathematics Units 3 & 4 are intended to be widely accessible and provide general preparation for employment or further study, especially in business and humanities.

There are two areas of study: Core and Applications. The core area of study, 'Data Analysis' and 'Recursion and Financial Modelling' is compulsory followed by a selection of two of a possible four optional modules from the Applications Area of Study.

The modules are: Matrices, Networks and decision mathematics, Geometry and measurement, Graphs and relations.

Assessed Coursework:
During this Unit, student progress will be monitored and assessed through a variety of means including:

- Classwork and homework tasks
- Practice tests at the end of each chapter
- SACs at the end of each module
- Two exams at the end of the year

There is an emphasis on using appropriate language to interpret and explain the mathematics. This subject requires a sound level of literacy.

Additional Information:
Students need to be proficient with a TI~Nspire CX CAS calculator.

Mathematical Methods Units 3 & 4

Semester: Semesters 1 & 2
Teacher: Ms Murrell

Recommended Previous Studies:
Successful completion of VCE Mathematical Methods Units 1 & 2 is mandatory. Students may also have completed VCE Specialist Mathematics Units 1 & 2.

Course Content:
VCE Mathematical Methods Unit 3 & 4 follows on directly from Units 1 & 2. Areas studied are Functions and graphs, Algebra, Calculus, Probability and statistics.
Students' skills using CAS technology are further developed throughout the units. The course demands that students have a high degree of competency in preceding mathematical studies.
The units provide the background for further study in fields such as Architecture, Biological Sciences, Social Sciences, Engineering, Building, Cartography, Chemical Sciences, Business, Education, Commerce, Computers, Economics, Medicine, Technology Design, Mathematics and Statistics.

Assessed Coursework:
During these Units, student progress will be monitored and assessed through the use of:

- Homework tasks
- Tests
- Analysis & Application tasks
- SACs

Additional Information:
Students should be proficient with the use of a TI Nspire CX CAS calculator.

Specialist Mathematics Units 3 & 4

Semester: Semesters 1 & 2
Teacher: Mrs Nainie

Recommended Previous Studies:
Successful completion of VCE Mathematical Methods Units 1 & 2 and Specialist Mathematics Units 1 & 2.

Course Content:
VCE Specialist Mathematics Units 3 & 4 can be undertaken concurrently with or on previous completion of VCE Mathematics Methods Units 3 & 4.
The course assumes that students have a very high degree of competency in preceding mathematical studies. Areas of study are Functions and graphs, Algebra, Calculus, Vectors, Mechanics, Probability and statistics.
This course is intended for those with a strong interest in Mathematics or who wish to undertake specialist courses in Mathematics and related disciplines such as engineering and physical sciences.
Throughout the course, CAS calculators will be used to reinforce students' understanding of concepts.

Assessed Coursework:
During these Units, student progress will be monitored and assessed through the use of:

- Analysis tasks
- Tests
- Application tasks
- SACs

Additional Information:
Students should be proficient with the use of a TI~Nspire CX CAS calculator.
Specialist Mathematics Units 3 & 4 is undertaken in conjunction with Mathematical Methods (CAS) Units 3 & 4.