400 10 MTH — MATHEMATICS

INTRODUCTION

This course establishes the confidence and skills necessary for success in the senior school. Year 9 skills are revised and further developed and many Year 11 concepts are introduced.

CONTENT

- Algebra
- Trigonometry
- Vectors
- Measurement
- Number
- Geometry
- Graphing relationships

SKILLS

- Clear communication of mathematical ideas
- Investigating and problem solving
- Applying mathematics and modelling

ACTIVITIES

Several competitions provide interesting and varied challenges and, for some, recognition through certificates and prizes.

- the Junior Mathematics Competition
- the Australian Mathematics Competition or ICAS
- Cantamath.

ASSESSMENT

Two common tests and an end-of-year examination, as well as various class tasks.

401 11 MTH — MATHEMATICS (Main)

This is the mainstream course at NCEA Level 1 and provides a solid foundation for progression into the year 12 and year 13 Mathematics courses.
This is the right course for those intending to study mathematics, or sciences, at senior school or tertiary level and also those with mathematical ability.

CONTENT AND SKILLS

Topics covered in the course are:
Numeric Reasoning, Algebra, Geometry, Trigonometry, Statistical Reasoning, Probability, Measurement.

The content covers a diverse range of mathematical topics and develops a wide range of knowledge and skills that can be used in future maths courses and in other subjects. Students will be challenged to develop an in depth understanding of mathematical concepts.

FUTURE PATHWAYS

Students can progress into 12MTA or 12STA and then into one or both of 13CAL and 13STA.

NCEA STANDARDS – 11MMC

Not all standards will necessarily be assessed.

	Level	Credits	L1 Lit.	L1 Num.	
External					
91028 v3	1	4	no	yes	Mathematics and Statistics 1.3 - Investigate relationships between tables, equations and graphs
91031 v4	1	4	no	yes	Mathematics and Statistics 1.6 - Apply geometric reasoning in solving problems
91037 v4	1	4	no	yes	Mathematics and Statistics 1.12 - Demonstrate understanding of chance and data
Internal					
91026 v3	1	4	no	yes	Mathematics and Statistics 1.1 - Apply numeric reasoning in solving problems
91030 v3	1	3	no	yes	Mathematics and Statistics 1.5 - Apply measurement in solving problems
91035 v3	1	4	yes	yes	Mathematics and Statistics 1.10 - Investigate a given multivariate data set using the statistical enquiry cycle

This course is designed to give success in NCEA to those students not wishing to study the NCEA standards that are algebra based or require higher level algebraic skills.

The content is aimed at providing students with mathematical skills useful in everyday life or in practical situations. Only one standard is externally assessed.

CONTENT AND SKILLS

Topics covered in the course are:

Numeric Reasoning, Trigonometry, Statistical Analysis, Probability, Measurement.

Algebra – *a skills topic only with no NCEA assessment.*

FUTURE PATHWAYS

This course is designed to provide a pathway into 12STA then into 13STA. However, a student excelling in most topics, especially the algebraic topic, could follow a pathway into 12MTA and then 13CAL.

NCEA STANDARDS – 11MAC

Not all standards will necessarily be assessed.

	Level	Credits	L1 Lit	L1 Num	
External					
91037 v4	1	4	no	yes	Mathematics and Statistics 1.12 – Demonstrate understanding of chance and data
Internal					
91026 v3	1	4	no	yes	Mathematics and Statistics 1.1 – Apply numeric reasoning in solving problems
91030 v3	1	3	no	yes	Mathematics and Statistics 1.5 – Apply measurement in solving problems
91032 v3	1	3	no	yes	Mathematics and Statistics 1.7 – Apply right-angled triangles in solving measurement problems
91035 v3	1	4	yes	yes	Mathematics and Statistics 1.10 – Investigate a given multivariate data set using the statistical enquiry cycle
91036 v3	1	3	yes	yes	Mathematics and Statistics 1.10 – Investigate bivariate numerical data set using the statistical enquiry cycle

RECOMMENDED LEVEL OF ATTAINMENT

At least five of the 7 Level 1 Standards, including Algebra. All cases are treated on their merits by the HOD and Dean.

INTRODUCTION

This is the mainstream mathematics course which provides the background for both 13 Calculus and 13 Statistics. Additionally the course provides students with the knowledge and skills necessary for other Year 12 and 13 courses – in particular the sciences.

FUTURE PATHWAYS

Leads to 13CAL and/or 13STA.

CONTENT AND SKILLS

Students develop analytical problem-solving skills and are introduced to calculus. Good algebraic skills are emphasised and are a necessary requirement for success.

Topics include:

- Calculus – differentiation, integration
- Coordinate geometry
- Algebraic expressions and methods
- Probability
- Trigonometry
- Graphing.

NCEA STANDARDS – 12MTA

Not all standards will necessarily be assessed.

	Level	Credits	UE Rdg.	UE Wrtg.	
External					
91261 v3	2	4	no	no	Mathematics and Statistics 2.6 - Apply algebraic methods in solving problems
91262 v3	2	5	no	no	Mathematics and Statistics 2.7 - Apply calculus methods in solving problems
91267 v3	2	4	no	no	Mathematics and Statistics 2.12 - Apply probability methods in solving problems
Internal					
91256 v3	2	2	no	no	Mathematics and Statistics 2.1 - Apply co-ordinate geometry methods in solving problems
91259 v3	2	3	no	no	Mathematics and Statistics 2.4 - Apply trigonometric relationships in solving problems
91269 v3	2	2	no	no	Mathematics and Statistics 2.14 - Apply systems of equations in solving problems

RECOMMENDED LEVEL OF ATTAINMENT

10 to 16 credits from the 11MTH course.

INTRODUCTION

This course is designed for students who have Level 1 NCEA and want to continue studying Maths but wish to do NCEA Standards that do not require algebraic skills. It has a Statistics and Probability focus which builds on the statistics done in Year 11 and prepares students for 13STA. The course consists of some of the Level 2 Achievement Standards not in the 12MTA course. Students doing well in this course are able to proceed into Year 13 Statistics.

FUTURE PATHWAYS

13STA.

CONTENT

- Probability
- Networks
- Simulations
- Statistics
- Questionnaires

NOTE

A considerable amount of the class work and all the internal assessment is computer-based. It is preferable that students have their own device which can run Windows OS 7 or 8. Therefore it is strongly recommended that students have their own Windows device as the availability of school computers may be limited. Students progressing from 12STA to 13STA in 2017 will similarly be expected to use their own device.

NCEA STANDARDS – 12STA

Not all standards will necessarily be assessed.

	Level	Credits	UE Rdg.	UE Wrtg.	
External					
91267 v3	2	4	no	no	Mathematics and Statistics 2.12 - Apply probability methods in solving problems
Internal					
91260 v3	2	2	no	no	Mathematics and Statistics 2.5 - Apply network methods in solving problems
91263 v3	2	3	no	no	Mathematics and Statistics 2.8 - Design a questionnaire
91264 v3	2	4	no	no	Mathematics and Statistics 2.9 - Use statistical methods to make an inference
91265 v3	2	3	no	no	Mathematics and Statistics 2.10 - Conduct an experiment to investigate a situation using statistical methods
91268 v3	2	2	no	no	Mathematics and Statistics 2.13 - Investigate a situation involving elements of chance using a simulation