

3. Mathematics Compulsory Part, Extended Part Module 1 (Calculus and Statistics) & Extended Part Module 2 (Algebra and Calculus)

I. Aims

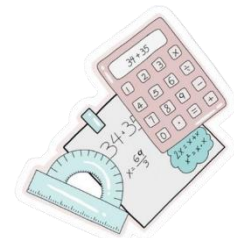
The aims of the NSS Mathematics Curriculum are to:

- ✓ further develop students' mathematical knowledge, skills and concepts;
- ✓ provide students with mathematical tools for their personal development and future career pathways;
- ✓ provide a foundation for students who may further their studies in Mathematics or related areas;
- ✓ develop in students the generic skills, and in particular, the capacity to use mathematics to solve problems, reason and communicate;
- ✓ develop students' interest in and positive attitudes towards mathematical learning;
- ✓ develop students' competence and confidence in dealing with mathematics needed in life; and
- ✓ help students to fulfill their potential in mathematics.

II. Curriculum Structure

The curriculum comprises a Compulsory Part and an Extended Part. In order to broaden students' opportunities for further study and work, two modules in the Extended Part are provided to achieve the purpose. These two modules are designed for students who wish to:

- ✓ further their studies in areas which require more mathematics; or
- ✓ engage in fields such as natural sciences, computer sciences, technology or engineering.



Module 1 (Calculus and Statistics) focuses on statistics and the application of mathematics. It is designed for students who will participate in study and work which require a wider and deeper knowledge of the application of mathematics, in particular, statistics.

Module 2 (Algebra and Calculus) focuses on more advanced mathematics concepts. It aims to prepare students for career in a mathematics-related discipline.

Compulsory Part	
• Quadratic equations in one unknown	• Locus
• Functions and graphs	• Equations of straight lines and circles
• Exponential and logarithmic functions	• More about trigonometry
• More about polynomials	• Permutation and combination
	• More about probability

<ul style="list-style-type: none"> • More about equations • Variations • Arithmetic and geometric sequences and their summations • Inequalities and linear programming • More about graphs of functions • Basic properties of circles 	<ul style="list-style-type: none"> • Measures of dispersion • Uses and abuses of statistics • Further applications <p>Inquiry and investigation</p>
Extended Part (Module 1)	Extended Part (Module 2)
<ul style="list-style-type: none"> • Foundation knowledge • Differentiation and its applications • Integration and its applications • Further probability • Binomial, Poisson and Geometric distributions and their applications • Normal distribution and its applications • Point and interval Estimation • Further learning unit 	<ul style="list-style-type: none"> • Foundation knowledge • More about Trigonometry • Limits and Differentiation • Application of Differentiation • Indefinite Integration and its application • Definite Integration and its application • Matrices and Determinants • Systems of linear equations • Vectors and its application • Further learning unit

III. Assessment

Compulsory Part

Component		Weighting	Duration
Public Examination	Paper 1 Conventional questions	65%	2.25 hours
	Paper 2 Multiple-choice questions	35%	1.25 hours

Module 1 (Calculus and Statistics) / Module 2 (Algebra and Calculus)

Component		Weighting	Duration
Public Examination	Conventional questions	100%	2.5 hours