



SENIOR HIGH MATHEMATICS

GCE A-Level Mathematics Curriculum

The GCE A-level Mathematics syllabus (implemented in 2006 and revised in 2016) aims to develop and use knowledge skills such as gathering, analysing and synthesising knowledge and devising practical solutions to problems. It emphasises on conceptual understanding, reasoning, applications, modelling and use of technology in the learning of Mathematics.

<p>Higher 1 (H1) Mathematics (Syllabus 8865)</p> <p>H1 Mathematics provides a foundation in Mathematics for students who intend to enrol in university courses such as business and social sciences. It covers Functions and Graphs, Calculus, and Statistics, with the main focus being on the understanding and application of basic concepts and techniques of statistics. This will equip students with the skills to analyse and interpret data, and to make informed decisions.</p> <p>Pre-requisites for O-level students: GCE O-level Mathematics</p> <p>Examination Format: One 3-hour paper marked out of 100 comprising:</p> <ul style="list-style-type: none"> • Section A (Pure Mathematics: 40 marks) • Section B (Probability and Statistics: 60 marks) 	<p>Higher 2 (H2) Mathematics (Syllabus 9758)</p> <p>H2 Mathematics prepares students adequately for university courses including Mathematics, Physics, and Engineering where more Mathematics content is required. The syllabus aims to develop mathematical thinking and problem solving skills in students. Topics covered include:</p> <table border="0"> <thead> <tr> <th style="text-align: left;"><u>Pure Mathematics</u></th> <th style="text-align: left;"><u>Probability and Statistics</u></th> </tr> </thead> <tbody> <tr> <td>• Functions and Graphs</td> <td>• Permutations and Combinations</td> </tr> <tr> <td>• Sequences and Series</td> <td>• Probability</td> </tr> <tr> <td>• Vectors</td> <td>• Binomial, and Normal Distributions</td> </tr> <tr> <td>• Complex Numbers</td> <td>• Sampling Methods and Theory</td> </tr> <tr> <td>• Calculus</td> <td>• Hypothesis Testing</td> </tr> <tr> <td></td> <td>• Correlation and Regression</td> </tr> </tbody> </table> <p>Pre-requisites for O-level students: Obtained a minimum of B4 in their Additional Mathematics or clear an interview administered by the College. Students with no Additional Mathematics background are strongly encouraged to take H1 Mathematics instead.</p> <p>Examination Format: Two 3-hour papers, each carrying 50% of the total mark, and each marked out of 100, as follows:</p> <p>Paper 1 (3 hours) All questions based on the Pure Mathematics section of the syllabus.</p> <p>Paper 2 (3 hours) Paper 2 consists of 2 sections, comprising:</p> <ul style="list-style-type: none"> • Section A (Pure Mathematics: 40 marks) • Section B (Probability and Statistics: 60 marks) 	<u>Pure Mathematics</u>	<u>Probability and Statistics</u>	• Functions and Graphs	• Permutations and Combinations	• Sequences and Series	• Probability	• Vectors	• Binomial, and Normal Distributions	• Complex Numbers	• Sampling Methods and Theory	• Calculus	• Hypothesis Testing		• Correlation and Regression
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Higher 2 (H2) Further Mathematics (Syllabus 9649)

H2 Further Mathematics, which is to be taken together with H2 Mathematics as “double mathematics”, is designed for students who are mathematically-inclined and who wish to further deepen their knowledge of mathematics and learn a wider range of mathematical methods and tools. This will give a head-start to students who plan to study mathematics-related university courses such as science and engineering. Topics covered include:

Pure Mathematics

- Mathematical Induction
- Further Calculus
- Recurrence Relations
- Matrices and linear spaces
- Numerical Methods

Probability and Statistics

- Poisson, Geometric, and Exponential Distributions
- Confidence Intervals
- Non-parametric Tests

Pre-requisites for O-level students:

Obtained a minimum of A2 in their Additional Mathematics and clear a selection test administered by the College. Students who subsequently qualify to take H2 Further Mathematics must take the following subject combination: H1 General Paper, H1 Project Work, H1 Mother Tongue (if required), H2 Maths, H2 Further Mathematics, H2 Economics, and **either** H2 Chemistry or H2 Physics.

Examination Format:

Two 3-hour papers, each carrying 50% of the total mark, and each marked out of 100, as follows:

Paper 1 (3 hours)

All questions based on the Pure Mathematics section of the syllabus.

Paper 2 (3 hours)

Paper 2 consists of 2 sections, comprising:

- Section A (Pure Mathematics: 50 marks)
- Section B (Probability and Statistics: 50 marks)

Higher 3 (H3) Mathematics (Syllabus 9820)

H3 Mathematics is offered to selected second year Junior College students. There are a variety of H3 Mathematics-related subjects available, one of which is offered by the College (MOE H3 Mathematics), while a few others are offered by our local universities.

MOE H3 Mathematics and H3 Mathematics-related modules offered by local universities are aimed to engage students who are keen to specialise in mathematics in solving more challenging problems and proving mathematical results.

Pre-Requisite:

- Must be offered together with H2 Mathematics.
- Student must first clear College’s criteria to offer H3 subjects, and then clear the university selection criteria (for university taught H3) or NJC Mathematics Department selection criteria (for MOE H3 Mathematics).

H3 Mathematics offered:

- University Taught – Linear Algebra (NUS)
- Taught in College –MOE H3 Mathematics (9820)

More details and information of H3 Mathematics subjects and selection criteria will be made available to interested students at a later date.

Frequently Asked Questions

1. Can I take H1 Mathematics and H2 Mathematics concurrently?

No. You are offered either H1 Mathematics or H2 Mathematics. Please check that you satisfy the College's criteria in qualifying for H2 Mathematics.

2. Which is the contrasting Mathematics syllabus to Arts subjects' combination?

Either H1 Mathematics or H2 Mathematics.

3. Is H1/H2 Mathematics a contrasting subject to Science subjects' combination?

No.

4. What is the reason for imposing a subject combination restriction for students taking H2 Further Mathematics?

The subject combination involving H2 Further Mathematics is only targeted at students who are certain that they will pursue mathematics-related science or engineering courses at university level.

5. What if I cannot cope with the academic demand for H2 Further Mathematics, can I replace H2 Further Mathematics with other H1 or H2 subject?

Absolutely no. Students who are offered H2 Further Mathematics must take H2 Mathematics together with a contrasting subject.

6. What if I cannot cope with the academic demand for H2 Mathematics, can I drop H2 Mathematics to H1 Mathematics?

Yes, provided that you are not taking other H1 subject and subject to Mathematics department's approval. This is not applicable to students who are taking H2 Mathematics and H2 Further Mathematics.

7. Do I need to take H2 Further Mathematics in order to qualify for H3 Mathematics?

No. Only H2 Mathematics is required.

8. What is the difference between H2 Further Mathematics syllabus and H3 Mathematics syllabus?

H2 Further Mathematics is an extension and expansion of H2 Mathematics, while H3 Mathematics is an extension of H2 Mathematics in terms of higher-order problem solving skills.

9. Is H2 Further Mathematics syllabus same as the old Further Mathematics?

It is not the same though there are some topics from old Further Mathematics. All questions are to be answered in the H2 Further Mathematics exam.