1. Introduction

The overall curriculum aims of the New Senior Secondary (NSS) Mathematics are to develop in students:
(a) the ability to think critically and creatively, to conceptualize, inquire and reason mathematically, and to use mathematics to formulate and solve problems in daily life as well as in mathematical contexts and other disciplines;
(b) the ability to communicate with others and express their views clearly and logically in mathematical language;
(c) the ability to manipulate numbers, symbols and other mathematical objects;
(d) number sense, symbol sense, spatial sense, measurement sense and the capacity to appreciate structures and patterns;
(e) a positive attitude towards mathematics learning and an appreciation of the aesthetic nature and cultural aspects of mathematics.

The curriculum framework for Mathematics embodies the key knowledge, skills, values and attitudes that students are to develop at the senior secondary level. It forms the basis on which schools and teachers can plan their school-based curricula, and design appropriate learning, teaching and assessment activities.
2. Modules offered

The structure of the mathematics curriculum (F.4 – F.6) and the major components of the mathematics curriculum framework are provided in the following diagram.

Students may take the compulsory part only, the compulsory part with module 1 (Calculus and Statistics) or the compulsory part with module 2 (Algebra and Calculus).

The NSS Mathematics curriculum will be implemented in the 2009-2010 academic year. The total teaching time is estimated to be approximately 270 hours for the compulsory part and 135 hours for the extended parts. As a result, mathematics will occupy about 13 to 15 % of the total study time of the students in the new senior secondary education.

The arrangement of NSS Mathematics curriculum in the school is shown in the following table:

<table>
<thead>
<tr>
<th>Target Students</th>
<th>Compulsory Part</th>
<th>Module 1</th>
<th>Module 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F.4A, F.4B, F.4C</td>
<td>F.4A, F.4B, F.4C</td>
<td>F.4D (Compulsory)</td>
</tr>
<tr>
<td></td>
<td>F.4C, F.4D</td>
<td>(Optional)</td>
<td></td>
</tr>
</tbody>
</table>
3. Syllabus

(i) Compulsory Part

1. Equations
2. Functions and Graphs
3. Statistics
4. Trigonometry
5. Polynomials
6. Exponential Functions and Logarithmic Functions
7. Circles
8. Variations
9. Locus
10. Coordinate Geometry
11. Inequalities and Linear Programming
12. Permutation and Combination
13. Probability
14. Arithmetic and Geometric Sequences
15. Further applications of mathematics

(ii) Module 1

1. Binomial Expansion
2. Harder Probability
3. Discrete Probability Distributions
4. Normal Distribution
5. Point and Interval Estimation
6. Exponential and Logarithmic Functions
7. Limits and Derivatives
8. Differentiation
9. Applications of Differentiation
10. Indefinite and Definite Integration
11. Applications of Integration
12. Numerical Integration
(iii) Module 2

1. Surds
2. Mathematical Induction
3. Binomial Theorem
4. Matrices, Determinants and System of Linear Equations
5. Vector in 2D and 3D
6. Trigonometry
7. Exponential and Logarithmic Functions
8. Limits and Derivatives
9. Differentiation
10. Applications of Differentiation
11. Indefinite Integration
12. Definite Integration
13. Applications of Integration

4. Assessment

The public assessment will consist of two parts, namely the public examination and School-based assessment (SBA). Before 2014, Schools are not required to submit SBA marks and the public examination results constitute 100% of the final subject results. After 2016, all schools have to submit SBA marks contributing 15% to the final subject results. The table below outlines the assessment design for the public assessment for the compulsory part and modules 1 and 2.

Compulsory Part (Before 2016)

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Public examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper 1 Conventional</td>
<td>65%</td>
<td>2¼ hours</td>
</tr>
<tr>
<td>Paper 2 Multiple-choice</td>
<td>35%</td>
<td>1¼ hours</td>
</tr>
</tbody>
</table>

Compulsory Part (After 2016)

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper 1 Conventional</td>
<td>55%</td>
<td>2¼ hours</td>
</tr>
<tr>
<td>Paper 2 Multiple-choice</td>
<td>30%</td>
<td>1¼ hours</td>
</tr>
<tr>
<td>School-based assessment</td>
<td>15%</td>
<td></td>
</tr>
</tbody>
</table>
Module 1 (Calculus and Statistics)

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public examination</td>
<td>100%</td>
<td>2½ hours</td>
</tr>
<tr>
<td>Conventional questions</td>
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</table>

Module 2 (Algebra and Calculus)

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public examination</td>
<td>100%</td>
<td>2½ hours</td>
</tr>
<tr>
<td>Conventional questions</td>
<td></td>
<td></td>
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