

**Dawood Public School**  
**Course Outline 2017-18**  
**Mathematics**  
**Class X**

**Books:**

Seng, T.et al, 2006, New Syllabus Mathematics 1(6<sup>th</sup> Edition), Singapore; Oxford University Press  
Seng, T.et al, 2006, New Syllabus Mathematics 2(6<sup>th</sup> Edition), Singapore; Oxford University Press  
Seng, T.et al, 2006, New Syllabus Mathematics 3(6<sup>th</sup> Edition), Singapore; Oxford University Press  
Addendum 5<sup>th</sup> edition

**Introduction**

This syllabus provides a comprehensive set of progressive learning objectives for mathematics. The objectives detail what the learner should know or what they should be able to do in each year of education. The learning objectives provide a structure for teaching and learning and a reference against which learners' ability and understanding can be checked.

This syllabus designed to promote continuity, coherence and progression within the study of Mathematics. The syllabus builds on the knowledge, understanding and skills developed within the Key Stage of Study for Mathematics.

This syllabus has been designed to meet the requirements of the GCSE regulations.

In studying a course based on this specification, students should be encouraged to make appropriate use of Information and Communications Technology (ICT), for example, spreadsheets and databases.

It has been designed to be as free as possible from ethnic, gender, religious, political or other forms of bias.

**Cambridge O level Mathematics (Syllabus D)**

**Syllabus Code 4024 Assessment:**

All candidates take two papers.

Each paper may contain questions on any part of the syllabus and questions will not necessarily be restricted to a single topic.

<b>Paper 1</b>	<b>2 hours</b>
Paper 1 has approximately 25 short answer questions. Candidates should show all working in the spaces provided on the question paper. Essential working must be shown for full marks to be awarded. No calculators are allowed for this paper.	
	80 marks
This paper will be weighted at 50% of the total qualification.	

<b>Paper 2</b>	<b>2 hours 30 minutes</b>
Paper 2 has approximately 11 structured questions. Candidates should answer all questions. Electronic calculators may be used and candidates should have access to a calculator for this paper. Candidates should show all working in the spaces provided on the question paper. Essential working must be shown for full marks to be awarded.	
	100 marks
This paper will be weighted at 50% of the total qualification	

## Assessment at a Glance:

Calculating aids:
<b>Paper 1</b> – the use of all calculating aids is prohibited.
<b>Paper 2</b> – all candidates should have a <b>silent</b> electronic calculator. A scientific calculator with trigonometric functions is strongly recommended.
Unless stated otherwise within an individual question, three figure accuracy will be required. This means that four figure accuracy should be shown throughout the working, including cases where answers are used in subsequent parts of the question. Premature approximation will be penalised, where appropriate.
In Paper 2, candidates with suitable calculators are encouraged to use the value of $\pi$ from their calculators.
The value of $\pi$ will be given as 3.142 to 3 decimal places for use by other candidates. This value will be given on the front page of the question paper only.

## Units

SI units will be used in questions involving mass and measures: the use of the centimetre will continue. Both the 12-hour clock and the 24-hour clock may be used for quoting times of the day. In the 24-hour clock, for example, 3.15 a.m. will be denoted by 03 15; 3.15 p.m. by 15 15, noon by 12 00 and midnight by 24 00.

Candidates will be expected to be familiar with the solidus notation for the expression of compound units, e.g. 5 cm/s for 5 centimetres per second, 13.6 g/cm<sup>3</sup> for 13.6 grams per cubic centimetre.

## Mathematical Instruments

Apart from the usual mathematical instruments, candidates may use flexi curves in this examination.

## Syllabus Aims and Assessment:

The syllabus demands understanding of basic mathematical concepts and their applications, together with an ability to show this by clear expression and careful reasoning.

In the examination, importance will be attached to skills in algebraic manipulation and to numerical accuracy in calculations.

## Aims

The course should enable students to:

- develop their mathematical knowledge and oral, written and practical skills in a manner which encourages confidence;
- read mathematics, and write and talk about the subject in a variety of ways;
- develop a feel for number, carry out calculations and understand the significance of the results obtained;
- apply mathematics in everyday situations and develop an understanding of the part which mathematics plays in the world around them;
- solve problems, present the solutions clearly, check and interpret the results;
- develop an understanding of mathematical principles;

- recognise when and how a situation may be represented mathematically, identify and interpret relevant factors and, where necessary, select an appropriate mathematical method to solve problems;
- use mathematics as a means of communication with emphasis on the use of clear expression;
- develop the abilities to reason logically, to classify, to generalise and to prove;

**Assessment objectives:**

The examination tests the ability of candidates to:

- recall, apply and interpret mathematical knowledge in the context of everyday situations;
- set out mathematical work, including the solution of problems, in a logical and clear form using appropriate symbols and terminology;
- organise, interpret and present information accurately in written, tabular, graphical and diagrammatic forms;
- perform calculations by suitable methods;
- use an electronic calculator;
- understand systems of measurement in everyday use and make use of them in the solution of problems;
- estimate, approximate and work to degrees of accuracy appropriate to the context;
- use mathematical and other instruments to measure and to draw to an acceptable degree of accuracy;
- recognise patterns and structures in a variety of situations and form generalisations;
- interpret, transform and make appropriate use of mathematical statements expressed in words or symbols;
- Interpret, use and present information in written, graphical, diagrammatic and tabular forms;

### Monthly Syllabus

MONTH	CHAPTERS	DURATION
<b>AUGUST</b>	<ul style="list-style-type: none"> <li>• Angle Properties of Circles</li> <li>• Graphical Solution of Functions</li> </ul>	2 Weeks 1 Week
<b>SEPTEMBER</b>	<ul style="list-style-type: none"> <li>• Graphical Solution of Functions</li> <li>• More on Probability</li> <li>• Linear Inequalities</li> </ul>	1 Week 2 Weeks 1 Week
<b>OCTOBER</b>	<ul style="list-style-type: none"> <li>• Graphs applied to Kinematics</li> <li>• Revision exercises Book 4</li> </ul>	2 Week 2 Weeks
<b>NOVEMBER</b>	<b>REVISION FOR MID TERM</b>	
<b>DECEMBER</b>	<b>MID TERM EXAMS</b>	
<b>JANUARY</b>	<ul style="list-style-type: none"> <li>• Trigonometric Ratios and Further Trigonometry</li> <li>• Cumulative Frequency Curve</li> </ul>	3 Weeks 1 Weeks
<b>FEBRUARY</b>	<ul style="list-style-type: none"> <li>• Past Papers</li> </ul>	
<b>MARCH</b>	<ul style="list-style-type: none"> <li>• Revision Exercises Book 4</li> <li>• Revision</li> <li>• Mock Exams</li> </ul>	



<p>Linear Inequalities Book 3 Chap No. 3 Pg No. (53-70) Addendum, Book 4</p>	<ul style="list-style-type: none"> <li>• solve simple linear equations in one unknown;</li> <li>• solve simple linear inequalities.</li> <li>• order quantities by magnitude and demonstrate familiarity with the symbols =, ≠, &gt;, &lt;, ≤, ≥.</li> <li>• forming inequalities when shading is done</li> <li>• leaving the region shaded or unshaded when inequalities are given.</li> </ul>
<p>Graphical Solution of Equations Book 3, Chap No. 8 Pg No. (141-173)</p> <p>Further Trigonometry and Three Dimensional Problems Book 3, Chap No. 11 Pg No. (297-330)</p>	<ul style="list-style-type: none"> <li>• solve equations approximately by graphical methods;</li> <li>• estimate gradients of curves by drawing tangents.</li> <li>• solve trigonometrical problems in two dimensions including those involving angles of elevation and depression and bearings;</li> <li>• extend sine and cosine functions to angles between 90° and 180°; solve problems using the sine and cosine rules for any triangle and the formula <math>\frac{1}{2} ab \sin C</math> for the area of a triangle;</li> <li>• solve simple trigonometrical problems in three dimensions. (Calculations of the angle between two planes or of the angle between a straight line and plane will not be required.)</li> <li>• interpret and use three-figure bearings measured clockwise from the north (i.e. 000°–360°).</li> </ul>
<p>Graphs Applied to Kinematics Book 3, Chap No. 9 Pg No. (186-205)</p> <p>Cumulative Frequency</p>	<ul style="list-style-type: none"> <li>• apply the idea of rate of change to easy kinematics involving distance-time and speed-time graphs, acceleration and retardation;</li> <li>• calculate distance travelled as area under a linear speed-time graph.</li> <li>• Finding values from graphs (raw values, percentages, fractions, etc)</li> <li>• Finding Median, range, upper quartile, lower quartile, interquartile range and percentiles.</li> <li>• Plotting cumulative frequency curve and finding unknowns from it which includes (Median, range, upper quartile, lower quartile, interquartile range, percentiles, etc)</li> </ul>

**Assessment and Home Work:**

Students will be assessed by taking test of each and every chapter. Home Work shall be given on a daily basis.

**Mathematical Notations:**

The list which follows summarises the notation used.

**Mathematical Symbols**

=	is equal to
≠	is not equal to
≡	is identical to or is congruent to
≈	is approximately equal to
<; <<	is less than, is much less than
<	is less than or equal to
>; >>	is greater than, is much greater than
>	is greater than or equal to
∞	infinity

**Operations**

$a + b$	a plus b
$a - b$	a minus b
$a \times b, ab, a.b$	a multiplied by b
$a \div b, a \overline{) b}, a/b$	a divided by b

**Functions**

f	function f
f(x)	the value of the function f at x
$f : A \rightarrow B$	f is a function under which each element of set A has an image in set B
$f : x \rightarrow a$	y the function f maps the element x to the element y
$f^{-1}$	the inverse of the function f

sin, cos, tan,  
cosec, sec, cot } the circular functions

$\sin^{-1}, \cos^{-1}, \tan^{-1},$   
 $\operatorname{cosec}^{-1}, \sec^{-1}, \cot^{-1}$  } the inverse circular relations

**Resource List:****Books:**

Sang, T. et al, 2008, New Syllabus Mathematics Work book 1, 2, 3 & 4 (6<sup>th</sup> Edition), Singapore; Oxford University Press

Bostock, L, S Chandler, A Shepherd, E Smith ST(P) Mathematics Books 1A to 5A  
(Stanley Thornes)

Book 1A	Book 2A	Book 3A	Book 4A, 4B
Book 1B	Book 2B	Book 3B	Book 5A, 5B

Buckwell, Geoff Mastering Mathematics (Macmillan Education Ltd) 0 333 62049 6  
Collins, J, Warren, T and C J Cox Steps in Understanding Mathematics (John Murray)  
Book 1  
Book 2  
Book 3  
Book 4

National Mathematics Project (NMP) Mathematics for Secondary Schools Red Track Books 1 to 5 (Longman Singapore Publishers Pte Ltd)  
Book 1  
Book 2  
Book 3  
Book 4

Cox, C J and D Bell Understanding Mathematics Books 1–5 (John Murray)  
Book 1  
Book 2  
Book 3  
Book 4

MSM Mathematics Group MSM Mathematics Books 1, 2, 3Y, 4Y, 5Y (Nelson) Murray, Les  
Progress in Mathematics Books 1E to 5E (Stanley Thornes)  
Book 1E  
Book 2E  
Book 3E  
Book 4E  
Book 5E

**Websites:**

- [www.nrich.com](http://www.nrich.com)
- [www.hoddereducation.com](http://www.hoddereducation.com)
- [www.collinseducation.com](http://www.collinseducation.com)
- [www.pearsonschoolsandfecolleges.co.uk](http://www.pearsonschoolsandfecolleges.co.uk)
- [www.hoddereducation.com](http://www.hoddereducation.com)
- [www.lettsandlonsdale.com](http://www.lettsandlonsdale.com)
- [www.counton.org](http://www.counton.org)
- [www.math.com](http://www.math.com)
- [www.maths-help.co.uk](http://www.maths-help.co.uk)
- [www.mathsnet.net](http://www.mathsnet.net)