2. A GUIDE TO TH E SYLLABUS

The Advanced Level 'Pure Mathematics' is a two-year sixth form course which is scheduled to be covered in a total of 38O periods arising from the suggested time allocation of 8forty-minute periods per week for the course. Schools may choose a slightly different time allocation to allow for their own situations.

The syllabus is presented in an integrated form and it provides, through its suggested Time Ratio, and 'Notes on Teaching', an indication on how and to what depth a certain topic could be treated.

There are two main topic areas in the syllabus and they are presented as follows:

		Topic Area	Time Ratio
A		ALGEBRA	
	A1	The Language of Mathematics	10
	A2	Functions Mathematical induction	28
	A3	Mathematical Induction	12
	A4	Inequalities	20
	A5	The Binomial Theorem for Positive integral Indices	13
	A6	Polynomials and Equations	15
	A7	Vectors in $\mathbf{R}^2$ and $\mathbf{R}^3$	31
	A8	Matrices	21
	A9	System of Linear Equations in 2 or 3 Unknowns	10
	A10	Complex Numbers	25
		Sub-total for A	185
B:		CALCULUS and ANALYTICAL GEOMETRY	
	B1	Sequence, Series and their Limits	18
	B2	Limit, Continuity and Differentiability	13
	B3	Differentiation	28
	B4	Application of Differentiation	20
	B5	Integration	45
	B6	Application of Integration	20
	B7	Analytical Geometry	31
		Sub-total for B	175
		Total	360

Teachers should note that the sequence presented in this syllabus is just an example and the categorization of the topics as A or B is done with a belief that such grouping and arrangement may offer certain degree of fluency in teaching. In fact teachers are free to choose their own teaching sequences suiting the needs of the students. One plausible sequence quite commonly accepted by teachers is as follows:

$$A1 \rightarrow A2 \rightarrow A3 \rightarrow A4 \rightarrow A5 \rightarrow A6 \rightarrow B1 \rightarrow B2 \rightarrow B3 \rightarrow B4 \rightarrow B5 \rightarrow B6 \rightarrow B7 \rightarrow A7 \rightarrow A8 \rightarrow A9 \rightarrow A10$$

Some teachers, on the other hand, may prefer to apportion the number of periods allotted per week/cycle and start teaching according to two sequences of topics in a 'parallel' manner. Amongst different feasible approaches and sequencing of topics, teachers are expected to exercise their expertise in smoothing out, during teaching, possible irregularities sprang from the teaching sequence preferred like the case in which A7 'Vectors' precedes A8 'Matrices' teachers have to elaborate a bit more on the use of determinant in handling cross-product in R^3. It is anticipated and recommended by the Curriculum Development Council Mathematics Subject Committee (Sixth Form) that the unit A1 'The Language of Mathematics' should be taught in the first place as preliminary prerequisite so as to familiarize the students with the usual symbols and trends of thinking in pure mathematics. Last but not least, it is hoped that the presentation in the syllabus will provide teachers with maximum flexibility so that the course of teaching adopted can be adjusted to meet the individual teaching situation.

The time ratio given in each unit is the numerator of a fraction whose denominator, 380, is related to the total time spent on the subject during the two years. This has taken into account the time spent on classroom tests and examinations. It is intended that this time ratio will indicate what fraction of the available total time may be spent on a certain unit. It can be seen that the total time ratio is still 20 running short. This amount of time is expected to be spent in revising the various topic areas at the end of the course.

Specific objectives are given for each topic area and in the 'Detailed Content', the subject matter of the topic is broken down into sub-topics. The teaching methods or materials suggested in the 'Notes on Teaching' are by no means exhaustive. while providing an example of a way in which certain topic can be taught, the notes also try to indicate the type of treatment required. In order to gear to the overall objectives of the syllabus, teachers are encouraged to provide students with, as far as possible, more examples on applications instead of just on abstract thinking. Because in this way, students' interest and curiosity in learning mathematics can be aroused and their appreciation of the power, usefulness and versatility of mathematics be promoted. And, perhaps, this is a way to generate aspirants and celebrities of mathematics.

Finally, the 'Notes on Teaching' should be taken as a guide to the spirit of the syllabus rather than a rigid teaching plan that must be followed closely. Teachers are, therefore, encouraged to explore and design their own teaching methods and approaches as they think suit.

In the Appendix, titles of mathematics books including glossaries and encyclopedias, which are useful in the teaching of Advanced Level Pure Mathematics course, are listed for teachers' reference. To get the updated references, teachers must, however, keep themselves informed of new and recent developments in the teaching of the course.