2. GUIDE TO THE SYLLABUS

This syllabus is presented in 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.

The suggested time allocation for the course is 8 periods per week and it is assumed that there are 40 minutes in each period. However, schools may choose a slightly different time allocation' to allow for their own situations.

In the syllabus, there are 4 main topic areas comprising 21 units. They are presented in a sequence as follows:

Topic Area			*Time Ratio*
I.		**Vectors and Mechanics**	
	Unit 1	Vectors	27
	2	Statics and Friction	21
	3	Kinematics	18
	4	Newton's Laws of Motion	12
	5	Momentum, Work, Energy, Power and Conservation Laws	5
	6	Impact	15
	7	Motion of Projectile under Gravity	17
	8	Circular Motion	12
	9	Simple Harmonic Motion	20
	10	Motion of a Particle in a Plane	8
	11	Motion of Rigid Body	34 (189)
II.		**Differential Equations**	
	Unit 12	First Order Differential Equations and its Applications	17
	13	Second Order Differential Equations and its Applications	28 (45)
III.		**Numerical Methods**	
	Unit 14	Interpolation and Lagrange, Interpolating Polynomials	9
	15	Approximation	12
	16	Numerical Integration	13
	17	Numerical Solution of Equations	16 (50)
IV.		**Probability and Statistics**	
	Unit 18	Introductory Probability Theory	19
	19	Basic Statistical Measures	8
	20	Random Variables, Discrete and Continuous Probability Distributions	34
	21	Statistical Inference	27
		Total:	372

Teachers should note that the sequence presented in this syllabus is just an example. In fact, they are free to choose their own teaching sequences. For example, the topic areas may be taught in the sequence:

'Differential Equations', 'Vectors and Mechanics', 'Numerical Methods', 'Probability and Statistics'.

Similarly, the 11 units in the topic area 1 may be presented in the sequence:

'Vectors', 'Statics and Frictions', 'Kinematics', 'Motion of Projectile under Gravity', 'Newton's Laws of Motion', 'Momentum, Work, Energy, Power and Conservation Laws', 'Circular Motion', 'Motion of a Particle in a Plane', 'Impact', 'Simple Harmonic Motion', 'Motion of a Rigid Body'.

It is hoped that the presentation in the syllabus will provide teachers with maximum flexibility so that courses can be adjusted to meet the individual teaching situation.

The time ratio given in each unit (and hence in each topic area) 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 total time may be spent on the unit in question. It can be seen that the total time ratio is still 8 running short. This amount of time is expected to be spent in revising the various units at the end of the course.

Specific objectives are given for each unit, and in the 'Detailed Content', the subject matter of the unit is broken down into sub-units.

The teaching methods suggested in the notes on teaching are by no means exhaustive. While providing an example of a way in which each given topic may be taught, the notes also try to indicate the type of treatment required. However, in order to gear to the overall objectives of the syllabus, teachers are advised to provide students with more well-structured mechanical and real-life problems (such as decay, growth, cooling, quality inspection etc). In this way, students will be helped to develop analytic, critical and independent thinking (as they have to analyze the relevant information given and select the appropriate methods to tackle the problems). Moreover, an understanding of the concepts and principles of mathematical processes and their relations to different situations (including the situation of mechanics) will arouse and stimulate students' interest, and nurture their appreciation of the power and usefulness of mathematics. Adequate practice and frequent exposure to the success of solving problems will also elevate students' confidence in applying mathematics.

Finally, teachers should regard the notes on teaching as a guide to the

spirit of the syllabus rather than a rigid teaching plan that must be followed closely. They are encouraged to explore and discover their own teaching methods and approaches as they think suitable.

In the Appendix, titles of mathematics books, including glossaries and encyclopedias which are useful in the teaching of the Advanced Level Applied 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.