

Syllabus 9702

AS Physics

Recommended Prior Knowledge The Scheme of Work represents the first half of the A-level course (the AS Year). Students are assumed to have a good understanding of the content of an O Level or IGCSE Physics course, or of an equivalent science course with a significant Physics component.

General Resources. The ordinary apparatus of a physics laboratory is required. Note that the list of apparatus given under the section in the Syllabus on Practical Assessment is not intended as a guide as to the contents of a Physics laboratory.

A selection of textbooks from the Resource List in the Syllabus document. Library copies of alternative texts should be available. Some Internet sites are suggested throughout this Scheme. These suggestions are intended for guidance only.

The use of I.T. is recommended wherever the teacher feels that it is appropriate. A list of suggestions is printed in the Syllabus document. Note that questions will not be set where the answer relies upon knowledge of a particular I.T. application.

UNITS

		Syllabus Topics Covered	
1	Quantities and their measurement. Physical quantities and their units of measurement are studied, together with techniques of measurement. .	Topics 1 and 2	Approximately 15% of the time for the AS course should be devoted to this Unit, including practical work where appropriate.
2	Motion, force and energy Newtonian mechanics together with the forces and energy involved are studied..	Topics 3, 4, 5 and 6	Approximately 30% of the time for the AS course should be devoted to this Unit, including practical work where appropriate.
3	Electric charge Both charges in motion (electric current) and some aspects of electrostatics are included.	Topics 17, 19 and 20.	Approximately 25% of the time for the AS course should be devoted to this Unit, including practical work where appropriate.
4	Matter Aspects of atoms and molecules are studied, including solids, liquids, gases and radioactivity.	Topics 29, 10 and 27.	Approximately 15% of the time for the As course should be devoted to this Unit, including practical work where appropriate
5	Waves The Unit includes the nature of different types of wave together with the wave properties of polarisation, diffraction and interference.	Topics 15 and 16.	Approximately 15% of the time for the AS course should be devoted to this Unit, including practical work where appropriate.

TEACHING ORDER

It should be noted that it is not intended that the Units are of equal size. Rather, the Units have been designed to provide coherent topics that will guide students through the AS course in a logical manner.

Physics is a science of measurement. Unit 1 introduces the student to quantities and their measurement. It is a relatively short Unit. There are two reasons why it is important that this aspect is studied at the earliest stage of the course. First, quantities and their units are vital in all Units of the A and A2 course.

Second, the study of how measurements are made is the basis for the development of experimental skills that must be practised throughout the course.

Units 2 and 3 should be studied next and can be taught consecutively or concurrently, depending on teaching resources within the school or college. If taught consecutively, Unit 2 should be taught before Unit 3 since aspects of dynamics are required when studying charged particles in motion.

Units 4 and 5 can also be taught consecutively or concurrently, but after Units 2 and 3. If taught consecutively, Unit 5 should be studied last. The concepts underlying Waves are more difficult to understand and students do need to develop a more mature attitude towards physics before studying this aspect of the Subject.

ROLE OF PRACTICAL WORK

Throughout the teaching of each Unit, the role of practical work is of paramount importance. Not only does it enable students to develop experimental skills but also it assists with the understanding of theoretical concepts. Demonstrations of experimental procedures and the use of various types of models are an integral part of the teaching process.

Practical work is assessed under the headings of 'Manipulation, Measurement and Observation', 'Presentation', 'Analysis, Conclusions and Evaluation' and 'Planning'. The descriptions and assessment criteria are included in the Syllabus in Section 5, Practical Assessment.

It is recognised that the skill of 'Planning' requires a more mature outlook on Physics. Therefore, this skill is not assessed until A2. However, students should be introduced to 'Planning' in the AS course so that they may develop this aspect of experimental work.