

## Syllabus 9702

## Physics

**Recommended Prior Knowledge** 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 on Practical Assessment is not intended as a guide to the contents of a Physics laboratory.

A selection of textbooks from the Resource List provided in the Syllabus document.

Some Internet sites are suggested throughout the scheme of work. 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. However, questions will not be set where the answer relies on knowledge of a particular I.T. application.

### UNITS

1	Quantities and their measurement. Physical quantities and their units of measurement are studied, together with techniques of measurement. Syllabus Topics 1 and 2. Approximately 20% of the time for the AS course should be devoted to this Unit.
2	Motion, force and energy. Newtonian mechanics together with the forces and energy involved are studied. Syllabus Topics 3, 4, 5 and 6. Approximately 30% of the time for the AS course should be devoted to this Unit.
3	Electric charge. Both charges in motion (electric current) and some aspects of electrostatics are included. Syllabus Topics 17, 19 and 20. Approximately 30% of the time for the AS course should be devoted to this Unit.
4	Matter Aspects of atoms and molecules are studied, including solids, liquids, gases and radioactivity. Syllabus Topics 9, 10 and 27. Approximately 15% of the time for the AS course should be devoted to this Unit.
5	Waves The Unit includes the nature of different types of wave together with the wave properties of polarisation, diffraction and interference. Syllabus Topics 15 and 16. Approximately 15% of the time for the AS course should be devoted to this Unit.

## **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 steer 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 and is a relatively short Unit. It is important that this aspect is studied at the earliest stage of the course for two reasons. First, quantities and their units are vital in all Units of the AS 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 either be taught consecutively or concurrently, depending upon 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, then 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 Physics.

## **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 the experimental procedures, and the use of various types of model, by the teacher are an integral part of the teaching process.

Practical work is assessed under the headings of 'Planning', 'Implementing' and 'Interpreting and Concluding'. The descriptions and assessment criteria for each of these practical skills are included in the Syllabus document. 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.