PHYSICS (AQA)

Subject specific entry requirements: Physics B or Science (double) BB and Mathematics 6

General content

During Year 12, students study advanced topics relating to the areas of:

- Particles and Quantum Phenomena
- Electricity
- Mechanics
- Materials
- Waves

They build on this foundation in Year 13 to study further topics in:

- Gravitational and Electric Fields
- Use of Capacitors
- Magnetic Fields and Electromagnetic Induction
- Further Mechanics
- Radioactivity and Nuclear Energy
- Thermal Physics

There is also an additional topic which will be chosen from the range provided by AQA, comprising one of: Astrophysics, Medical Physics, Engineering Physics or Turning Points in Physics.

Investigative and Practical Skills are taught and assessed during the two years via twelve designated experiments which are planned, conducted, analysed and written-up in a lab book to demonstrate the essential practical competencies.

Method of assessment

Students sit three 2 hour written examinations:

Paper 1 is 85 marks in total (60 marks of short and long answer questions and 25 multiple choice questions) and covers the Year 12 material plus further mechanics from Year 13.

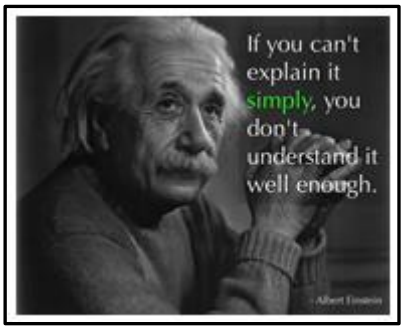
Paper 2 is 85 marks in total (60 marks of short and long answer questions and 25 multiple choice questions) and covers the remaining Year 13 material.

Paper 3 consists of 45 marks of short and long answer questions on practical skills and data analysis and plus 35 marks of short and long answer questions on the additional topic.

The exams will measure how students have achieved the following assessment objectives:

- Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures.
- Apply knowledge and understanding of scientific ideas, processes, techniques and procedures:
    - in a theoretical context
    - in a practical context
    - when handling qualitative data
    - when handling quantitative data.
- Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to:
    - make judgements and reach conclusions
    - develop and refine practical design and procedures.

Skills



- Students will develop their ability to handle increasingly complex mathematical concepts and use techniques such as exponential growth and logarithmic functions.
- Students will develop their competence in experimental work using a wide range of equipment
- Students will develop their ability to communicate key concepts fluently both verbally and in writing

Key features of study

The physics course allows students to develop and synthesise strengths in numerical analysis, verbal and written communication and practical work.

Aptitudes required

Students taking A level physics are not required to also take A level maths, but those who do will notice an overlap of topics in the Mechanics sections. All students taking this course will need to have strong maths skills, especially relating to the use of algebra. Students will also need good literacy skills as about half the marks on the examination papers will be obtained by producing descriptive and analytical written responses.

Work load

In addition to completing numerical and descriptive questions relevant to the topic being studied outside lesson time, students will be expected to do preparation work before practical lessons to research techniques for carrying out the experiment and analysing results. Students benefit from additional reading using their primary textbook to consolidate their classroom learning and will also need to prepare short assignments on key topics. Students seeking to apply to science courses in higher education should also take opportunities to complete background reading in books and journals, both on topics relevant to the course and on contemporary research.

Career connections

Physics is an essential subject for students wishing to pursue careers in engineering. Good grades in physics qualifications are also very highly regarded in management and financial sectors as they demonstrate fluency in both numerical and communication skills and the ability to be flexible about problem-solving. Students who continue their study of physics to degree level and then beyond have opportunities to participate in international research collaborations in a wide range of subject areas such as particle physics, cosmology, materials science and solid-state physics.