



Welcome to the mysterious world of A level Physics!

During this course you will be building upon what you have studied at GCSE, along with studying some exciting new topics.

### **What do we study?**

The first year of study is still classed as the AS level. However, this one year qualification does not count toward your overall A level qualification, after two years of study. All topics from both years will be examined at the end of the two year course.

#### **Year 1:**

- Working as a Physicist
- Mechanics
- Electric Circuits
- Materials
- Waves and the Particle Nature of Light

#### **Year 2:**

- Working as a Physicist
- Further Mechanics
- Electric and Magnetic Fields
- Nuclear and Particle Physics
- Thermodynamics
- Space
- Nuclear Radiation
- Gravitational Fields
- Oscillations

### **What is expected of you?**

The pace of learning at A level is faster than at GCSE. To remain on top of your studies you must ensure you are taking the following steps to success. First and foremost, you must be prepared for more independent study. You will have 4 hours of Physics lessons per week and you must make sure you are matching at least this amount with private study. This will include homework, going over notes, reading around the topic areas, watching scientific programmes, listening to scientific podcasts etc. You must be proactive in your approach to A level Physics study.

## **Mathematical content**

As you can probably expect, Physics has the most mathematical content of all the three sciences. In fact, this new A level qualification has more Maths in it than previous qualifications. 40% of the A level will be mathematically-based. We will be developing your maths skills throughout the two years, but you must ensure your GCSE maths skills are top notch. For that reason, a GCSE grade of a B or above is required.

## **What should my folder be like?**

Good and effective organisation is the key to success. If you are not organised you will struggle to bring everything together properly at the end of the year for your exams. To this end your folder should always contain the following:

- Minimum of the *last 2 weeks* of work
- Key words list
- Specification for each topic
- Data sheet of scientific constants
- Equation sheet for each topic
- Independent learning task sheets
- *Last two* pieces of marked work – Targets are then used in following pieces of work guide self-improvement.

## How do the exams work?

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### AS level Assessment summary

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#### Summary of table of assessment

Students must complete both assessments in May/June in any single year.

#### Paper 1: Core Physics I

**\*Paper code: 8PH0/ 01**

- Questions draw on content from the topics listed in the section *Qualification at a glance*.
- Questions are broken down into a number of parts.
- Availability: May/June
- First assessment: 2016
- The assessment is 1 hour 30 minutes.
- The assessment consists of 80 marks.

**50% of the  
total  
qualification**

#### Paper 2: Core Physics II

**\*Paper code: 8PH0/02**

- Questions draw on content from the topics listed in the section *Qualification at a glance*.
- Questions are broken down into a number of parts.
- Availability: May/June
- First assessment: 2016
- The assessment is 1 hour 30 minutes.
- The assessment consists of 80 marks.

**50% of the  
total  
qualification**

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# A level Assessment summary

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## Summary of table of assessment

Students must complete all assessment in May/June in any single year.

### Paper 1: Advanced Physics I

**\*Paper code: 9PH0/01**

- Questions draw on content from the topics listed in the section *Qualification at a glance*.
- Questions are broken down into a number of parts.
- Availability: May/June
- First assessment: 2017
- The assessment is 1 hour 45 minutes.
- The assessment consists of 90 marks.

**30% of the  
total  
qualification**

### Paper 2: Advanced Physics II

**\*Paper code: 9PH0/02**

- Questions draw on content from the topics listed in the section *Qualification at a glance*.
- Questions are broken down into a number of parts.
- Availability: May/June
- First assessment: 2017
- The assessment is 1 hour 45 minutes.
- The assessment consists of 90 marks.

**30% of the  
total  
qualification**

### Paper 3: General and Practical Principles in Physics

**\*Paper code: 9PH0/03**

- Questions draw on content from any of the topics in the specification.
- Questions are broken down into a number of parts.
- Questions may involve two or more topics.
- Availability: May/June
- First assessment: 2017
- The assessment is 2 hours 30 minutes.
- The assessment consists of 120 marks.

**40% of the  
total  
qualification**

## Science Practical Endorsement\*\*

\*Paper code: 9PH0/04

- Internally assessed and externally moderated by Pearson.
- Availability: May/June
- First assessment: 2017
- The practical endorsement is teacher assessed against the Common Practical Assessment Criteria (CPAC). Final assessment requirements will be published in spring 2015.

## Synoptic assessment

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Synoptic assessment requires students to work across different parts of a qualification and to show their accumulated knowledge and understanding of a topic or subject area. Synoptic assessment enables students to show their ability to combine their skills, knowledge and understanding with breadth and depth of the subject. In this qualification, synoptic assessment can be found in *Paper 3: General and Practical Principles in Physics*.

## Transferable skills

### Cognitive skills

- **Non-routine problem solving** – expert thinking, metacognition, creativity.
- **Systems thinking** – decision making and reasoning.
- **Critical thinking** – definitions of critical thinking are broad and usually involve general cognitive skills such as analysing, synthesising and reasoning skills.
- **ICT literacy** – access, manage, integrate, evaluate, construct and communicate.

### Interpersonal skills

- **Communication** – active listening, oral communication, written communication, assertive communication and non-verbal communication.
- **Relationship-building skills** – teamwork, trust, intercultural sensitivity, service orientation, self-presentation, social influence, conflict resolution and negotiation.
- **Collaborative problem solving** – establishing and maintaining shared understanding, taking appropriate action, establishing and maintaining team organisation.

## Intrapersonal skills

- **Adaptability** – ability and willingness to cope with the uncertain, handling work stress, adapting to different personalities, communication styles and cultures, and physical adaptability to various indoor and outdoor work environments.
- **Self-management and self-development** – ability to work remotely in virtual teams, work autonomously, be self-motivating and self-monitoring, willing and able to acquire new information and skills related to work.

## Practical Assessment

Coursework no longer exists at A level! Instead, you will carry out a series of class practicals (at least 6 in each year). These will develop your experimental skills of planning, investigating, error analysis, observation, and analysis. At the end of the 2 year course, we will assess whether or not you have gained the necessary skills to obtain a pass at Practical Assessment. Each practical should take approx. 3 or 4 lessons.

### Criteria for the assessment of GCE Science practical competency for Biology, Chemistry and Physics

#### Competency

Practical mastery

In order to achieve a **pass**, students will need to have met the following expectations.

Students will be expected to develop these competencies through the acquisition of the technical skills specified in *Appendix 5* of the subject content for each science subject: biology, chemistry and physics. Students can demonstrate these competencies in any practical activity undertaken throughout the course of study. The minimum 12 practical activities prescribed in the subject specification, which cover the requirements of *Appendix 5c*, will provide opportunities for demonstrating competence in all the skills identified, together with the use of apparatus and practical techniques for each subject.

Students may work in groups but must be able to demonstrate and record independent evidence of their competency. This must include evidence of independent application of investigative approaches and methods to practical work.

Teachers who award a pass to their students need to be confident that the student consistently and routinely exhibits the competencies listed below before completion of the A Level course.

1. Follows written procedures	a) Correctly follows instructions to carry out the experimental techniques or procedures.
2. Applies investigative approaches and methods when using instruments and equipment	<p>a) Correctly uses appropriate instrumentation, apparatus and materials (including ICT) to carry out investigative activities, experimental techniques and procedures with minimal assistance or prompting.</p> <p>b) Carries out techniques or procedures methodically, in sequence and in combination, identifying practical issues and making adjustments when necessary.</p> <p>c) Identifies and controls significant quantitative variables where applicable, and plans approaches to take account of variables that cannot readily be controlled.</p> <p>d) Selects appropriate equipment and measurement strategies in order to ensure suitably accurate results.</p>

**Criteria for the assessment of GCE Science practical competency for Biology, Chemistry and Physics**

3. Safely uses a range of practical equipment and materials	<p>a) Identifies hazards and assesses risks associated with these hazards when carrying out experimental techniques and procedures in the lab or field.</p> <p>b) Uses appropriate safety equipment and approaches to minimise risks with minimal prompting.</p> <p>c) Identifies safety issues and makes adjustments when necessary.</p>
4. Makes and records observations	<p>a) Makes accurate observations relevant to the experimental or investigative procedure.</p> <p>b) Obtains accurate, precise and sufficient data for experimental and investigative procedures and records this methodically using appropriate units and conventions.</p>
5. Researches, references and reports	<p>a) Uses appropriate software and/or tools to process data, carry out research and report findings.</p> <p>b) Sources of information are cited demonstrating that research has taken place, supporting planning and conclusions.</p>

## **Resources**

- Text book – Limited copies in school
- Revision guides and Workbooks
  - Edexcel AS/A level Physics Revision Guide  
ISBN: 978 1447989 98 1
  - Edexcel AS/A level Physics Revision Workbook  
ISBN: 978 1447989 95 0
- Youtube – Minute Physics
- New Scientist magazine
- Horizon TV programme
- Science discussion podcasts – Neil de Grasse Tyson, Brian Cox, Dara O’Briain to name but a few.
- Pearson website – for all past papers and mark schemes

## **Contact**

Please come and find myself, Mrs Baxter-Harries, or Mr Jones at any time to discuss any concerns you may have. Problems addressed early enough can and will be resolved.

Good luck!

Mr Fabian  
Head of Physics