

REVISED GCE AS & A LEVEL
Student Guide
Physics

For first teaching from September 2008

For first award of AS Level in Summer 2009

For first award of A Level in Summer 2010

physics

Student Guide: **Physics**

GCE Physics will give you a fascinating insight into the world of Physics. It reveals the link between theory and experiment and informs you about how physics has developed and is used in present-day society. You will study 3 units at AS level and 3 at A2 level. Four of the units are theory based and are assessed by written examination papers. The remaining two units are practical units which are assessed by a practical examination.

The **AS** (Advanced Subsidiary)/**A2** structure of this GCE means you can study for the **AS** Level award, completing units AS 1, AS 2 and AS 3 and then decide if you wish to continue to **A2** Level where you will complete the three additional units A2 1, A2 2 and A2 3. This will lead to an award for the **full Advanced GCE**.

Q. Why study GCE Physics?

This course is suitable for you if you wish to further your education in physics. You can take this course as a 1 year AS level course which would be beneficial for use with many subjects you would like to study in the future and it would also be beneficial in various careers. If you go on to study the full GCE (ie both the AS and A2 course) then it provides a good foundation for further study at university or for students going into the world of work.

Through studying physics, you will develop new ways of looking at the world and new thinking skills. These thinking skills can be applied to other disciplines such as chemistry, biology, medicine, earth and planetary sciences, are useful in the world of work and help you cope with everyday life.

Q. What do I need to be able to take this course?

You will need to have obtained a good standard at GCSE Science: Double Award, GCSE Science: Physics or other equivalent courses because the AS specification builds on the knowledge, understanding and skills developed within these subjects. The A2 specification builds on the knowledge, understanding and skills developed within the AS course. A good standard at GCSE Mathematics would also be beneficial if you plan to study GCE Physics.

Q. What will I study?

You will complete six assessment units in GCE Physics – three at AS Level and three at A2 Level.

AS 1: Forces, Energy and Electricity	This unit teaches you to deal with physical quantities and scalars and vectors, which are required in all branches of physics. You will build on your knowledge and understanding of Newtonian mechanics and electricity to explain many economic and social applications of physics.
AS 2: Waves, Photons and Medical Physics	The ideas about waves in this topic provide vital links to the study of light and sound. The section on photons introduces the quantum theory and the concept of wave-particle duality, two of the most revolutionary advances in physics. Work on medical physics introduces an application with opportunities for discussion on ethical, moral and environmental issues.
AS 3: Practical Techniques	In this unit you will acquire essential practical techniques, including planning, implementing, analysis, evaluation and communication.
A2 1: Momentum, Thermal Physics, Circular Motion, Oscillations and Atomic and Nuclear Physics	In this unit you will work on momentum, circular motion and oscillations. Thermal physics introduces an example of a simple model that can be extended to explain the properties of gases. The section on atomic and nuclear physics has important social and economic applications and leads to an introduction to particle physics.
A2 2: Fields and their Applications	This is a fundamental area of physics which has numerous applications in everyday life. You will study action-at-a-distance forces that arise between bodies that are separated from one another.
A2 3: Practical Techniques	In this unit you will build on the essential practical techniques that were acquired in Unit AS 3. These include planning, implementing, analysis, evaluation and communication.



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How is GCE Physics assessed?

Unit	Type of Assessment
AS 1: Forces, Energy and Electricity Worth 37% of AS 18.5% of A Level	1 hour 30 minute written paper consisting of a number of compulsory short-answer questions, some with opportunities for extended writing. <i>Available in January and summer series of examinations.</i>
AS 2: Waves, Photons and Medical Physics Worth 37% of AS 18.5% of A Level	1 hour 30 minute written paper consisting of a number of compulsory short-answer questions, some with opportunities for extended writing. <i>Available in the January and summer series of examinations.</i>
AS 3: Practical Techniques Worth 26% of AS 13% of A Level	1 hour 30 minute test of practical skills including 4 short experimental tests and 1 analysis of experimental results. <i>Available in the summer series of examinations.</i>
A2 1: Momentum, Thermal Physics, Circular Motion, Oscillations and Atomic and Nuclear Physics Worth 37% of A2 18.5% of A Level	1 hour 30 minute written paper consisting of a number of compulsory short-answer questions, some with opportunities for extended writing and elements of synoptic assessment. <i>Available in January and summer series of examinations.</i>
A2 2: Fields and their Applications Worth 37% of A2 18.5% of A Level	1 hour 30 minute written paper consisting of a number of compulsory short-answer questions, some with opportunities for extended writing and elements of synoptic assessment. <i>Available in the summer series of examinations.</i>
A2 3: Practical Techniques Worth 26% of A2 13% of A Level	1 hour 30 minute test of practical skills: 2 experimental tests and 1 question on planning and design which includes synoptic assessment. <i>Available in the summer series of examinations.</i>

Q. What can I do with a qualification in Physics?

GCE Physics provides you with a sound basis for the further study of physics and related subjects at university, such as applied mathematics, astronomy, astrophysics, engineering (including its aeronautical, civil, electrical, electronic and mechanical branches), geophysics and materials science. If you go directly into employment, GCE Physics provides a basis for work in the fields of science, engineering, medicine, communications, computers and information technology. It is also relevant to those areas of commerce and branches of the public service where problem-solving and practical skills are valued.

How can I find out more?

There are a number of ways that you can find out more about studying Physics.

These include:

- Teachers at your school or college
- Students who are already studying the subject
- www.ccea.org.uk/physics
- Institute of Physics - www.iop.org
- Careers advisor
- UCAS www.ucas.com or CAO www.cao.ie for details on entry requirements for university courses

To view the full specification and the full range of support material available for GCE Physics, please visit the Physics microsite www.ccea.org.uk/physics

