

Change to all A Levels

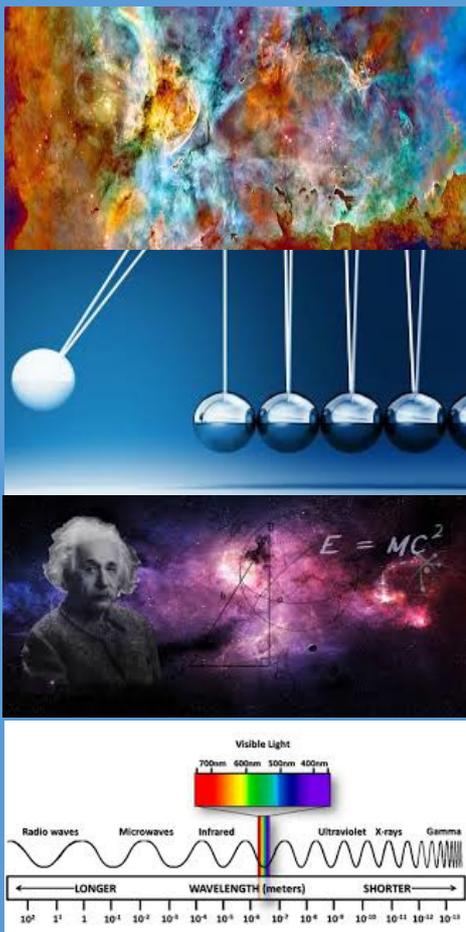
Changes are under way for all A levels in all schools and colleges and some awarding bodies are still revising their syllabuses for 2015. As a result, this guide is an illustration of the content but the exact details may change.

The most significant changes in A Levels and AS exams (but see below for the different timescale in this subject) are:

- All assessment for A Levels will be through end of course exams with no practical element in most subjects.
- There will still be AS as one year “half A Levels” but you won’t be able to add an A2 to make them into a full A Level.
- This means if you want a full A Level you will need to decide that at the start of your course.
- You will still be able to combine A Levels with other types of qualifications such as BTECs.
- These changes are happening at different times for different subjects.
- You’ll have lots of support from us before you have to make your final choice of subjects.

Specifics for this subject:

The first teaching for the new examinations is in September 2015 leading to an end of course exam in 2017.



What is Physics?

Physics is the natural science of matter and energy, examining the fundamental forces in our world such as heat, light, radiation, sound, electricity and magnetism.

These forces can be studied at scales ranging from the behaviour of cosmic bodies to atomic structures and nanoparticles.

The object is to understand the origins and dynamics of the universe and how it behaves and there are many links to aspects of Chemistry and Mathematics.

Different branches of Physics deal with different combinations mass and motion, for example classical and quantum mechanics.

While many areas of Physics are still best explained by centuries old laws, modern developments are the subject of intense research, for example:

- the origins of the Universe;
- superconductors;
- chaos theory; and
- nanotechnology .

What GCSEs do I need to study Physics?

You will need to have done well in Physics at GCSE (normally an A* or A) or to have performed very strongly in Physics elements of Combined Science. We’d normally expect you to have at least an A in GCSE Maths to make sure you will be able to handle the complex mathematical modelling within Physics A Level.



What could I do with it afterwards?

Physics A Level is highly valued by universities and employers, partly because of its content and partly because students who do well at Physics have shown their ability to cope with complex subject matter. Careers for which Physics is particularly useful include Engineering, Architecture, Civil Engineering, Computing, Medicine, Oceanography, Research and Transport.



What form does the assessment take?

There are end of course exams, which are written tests of your ability to carry out calculations and solve problems using theory. This will normally take the form of a combination of mathematical calculations, multiple responses and extended and structured explanations (including demonstration of your understanding of practical work).

Course details

The new A Level syllabuses include content-led approaches (specific topics that cover the key concepts) and context-led approaches (practical problems that demonstrate how Physics is applied). These are different approaches to gaining the same understanding. We will make a decision on which to adopt early in 2015.

Examples of modules in a **content-led approach**

- **Practical skills in Physics**
 - Planning, implementation, analysis & evaluation
- **Foundations of Physical theory**
 - Quantities and units
 - Scalars and vectors
 - Measurements
- **Forces and motion**
 - Forces and motion in action
 - Work, energy and power
 - Materials
 - Newton's laws of motion and momentum
- **Electrons, waves and photons**
 - Charge and current
 - Energy, power and resistance
 - Electrical circuits
 - Waves
 - Quantum physics (nanoscopic scale)
- **Newtonian and astrophysics**
 - Thermal Physics
 - Circular motion
 - Oscillations
 - Gravitational fields and astrophysics
- **Particles and medical physics**
 - Capacitors and electronic fields
 - Electromagnetism
 - Nuclear and particle Physics
 - Medical imaging

Examples of modules in a **context-led approach**

Themes that build understanding of all the content elements:

- **Practical skills in Physics**
 - Planning, implementation, analysis & evaluation
- **Physics in action**
 - Imaging and signalling
 - Sensing
 - Mechanical properties of materials
- **Understanding processes**
 - Waves and quantum behaviour
 - Space, time and motion
- **Rise and fall of the Clockwork Universe**
 - Creating models
 - Characteristics of space
 - Our place in the universe
 - Simple matter
 - Matter: hot or cold
- **Field and particle Physics**
 - Electromagnetism
 - Charge and field
 - Radiation and risk