SUBJECT:	**PHYSICS**
Title of GCE:	**A Level Physics**
Exam Board:	**AQA**
Syllabus Number:	**7408**

Course Overview:

Physics is the study of almost everything! The study of the Universe, of planets, of buildings, of vehicles, of mobile phones and integrated circuits and of subatomic particles. Physicists explore the fundamental nature of almost everything we know of. They probe the furthest reaches of the Earth to study the smallest pieces of matter. Join them to enter a world deep beneath the surface of normal human experience.

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The First year course includes a revision of the basics covered in Coordinated Science and then further develops knowledge and understanding of principles such as the properties of matter, waves, electricity, nuclear physics and mechanics.

The Second year course has a much greater emphasis on Mathematical formulae and their applications to physical principles..

Over the two years of the course, the following topics will be studied:

Particles and Quantum Phenomena – wave-particle duality, quantisation and the standard model of particle physics.

Electricity – basic electrical properties, electrical components and circuits.

Mechanics and Energy – forces and motion (including Newton's laws and projectile motion), energy and power, momentum, tuning effects and circular motion.

Materials – the properties of materials (density, elasticity, etc.) and their uses.

Waves and Oscillations – the basic properties of waves, refraction, diffraction, interference, simple harmonic motion, resonance and damping.

Fields – investigates the similarities and differences between gravitational and electric fields in terms of the forces they apply and the energy transfers within them, along with applications of the motion of particles within them.

Capacitance – the effect of capacitance and the use and operation of capacitors.

Electromagnetism – investigates the magnetic fields produced by the flow of a current, including the forces applied by them and electromagnetic induction.

Nuclear Physics – the structure of the nucleus, radioactivity, nuclear instability and the uses of this, including nuclear energy.

Thermal Physics – the thermal properties of materials, ideal gases and the kinetic theory of gases.

Physics, like all sciences, is a practical subject. Throughout the course you will carry out a wide range of practical activities including investigating interference and diffraction of laser light, measuring acceleration due to gravity, investigating systems that oscillate, the links between temperature, volume and pressure, safe use of ionising radiation and magnetic fields.

These practicals will give you the skills and confidence needed to investigate the way things behave and work. It will also ensure that if you choose to study a Physics-based subject at university, you'll have the practical skills needed to carry out successful experiments in your degree.

A Level Assessment:
Paper 1 (2 hours, 34% of A level)
Paper 2 (2 hours, 34% of A level)
Paper 3 (2 hours, 32% of A level)

Papers are assessed on the following topics:
Periodic motion (Measurements and Errors, Particles and radiation, Waves, Mechanics and materials, Electricity)
Thermal Physics (Further mechanics and Thermal physics, Fields and their consequences)
Practical skills and data analysis.

Coursework/Controlled Assessment:
There is no formal controlled assessment. However, the students have to demonstrate sound practical skills through a series of assessed practical activities to pass the course. At the end of the course successful students will receive an endorsement of practical skills together with their A-level grade.

Career opportunities:
Studying A-level Physics offers an infinite number of amazing career opportunities including:
• Geophysicist/field seismologist
• Healthcare scientist, medical physics
• Higher education lecturer
• Radiation protection practitioner
• Research scientist (physical sciences)
• Scientific laboratory technician
• Secondary school teacher
• Meteorologist
• Structural engineer
You can also move into engineering, astrophysics, chemical physics, nanotechnology, renewable energy and more, the opportunities are endless.

Possible degree options
The top seven degree courses taken by students who have an A-level in Physics are: Mathematics, Physics, Mechanical Engineering, Computer Science, Civil Engineering, Economics and Business

Students who study this subject often complement it with:
Biology, Chemistry, Maths, Further Maths

Useful revision websites:

http://www.s-cool.co.uk/a-level/physics
http://www.alevelphysicsonline.com

For more information or advice contact:
Mr S Naylor