

## Physics Curriculum Information

### Year 7

The work in Year 7 is designed to promote good observation and measurement. The girls are introduced to the measurement of some base units and to good practice in taking measurements. They will also learn how to communicate the work they are doing in a clear manner and will be introduced to the presentation of results in graphical form as well as in tables. The first year is almost entirely practical based.

#### Measurement

- What is Physics?
- Reading a scale
- Length, area & volume (regular & irreg.)
- Mass
- Temp. - Mercury-in-glass/Datalogging
- Time - Pendulum
- Measuring small quantities

#### Forces and their effects

- Types of force
- Why things float
- Density (salt/fresh water) –Basic idea
- Balanced forces (not moments)
- Weight
- Extension of a spring - Graphs
- Extension of a rubber band
- Friction
- Stopping distances
- Distance/time graphs
- Average speed

#### Electrical circuits

- Simple circuit/Conductors & Insulators
- Series
- Measuring current/ammeter
- Resistance
- Cells/voltage controlling brightness
- Current/energy
- Parallel
- Fuses/safety/research



## Magnets and electromagnets

- Magnetic materials
- N/S poles - attract/repel
- Stopping magnetism
- Making a magnet
- Compass
- Field - Earth's field research
- Electromagnets

## Year 8

The second year specification introduces further ideas of physics such as heat, energy and motion. This is to develop a broader understanding of physics and practical uses. There is more theory work in this scheme than in Year 7.

## Heating and cooling

- Temperature
- Kinds of thermometer
- Heat as energy
- Expansion
- Conduction/metals as good conductors
- Particle model for conduction
- Rate of temp. rise/fall – Datalogging
- Insulation (investigation)
- Convection
- Radiation
- Reducing heat loss at home

## Moments

- Levers/examples
- Levers in the body/antagonistic muscles
- Balance/gymnastics
- Counterbalance/cranes/human back model
- Moments – Units Nm/Ncm
- Moments in balance

## Energy

- Types of energy
- Energy transfers (circus)



- Principle of conservation of energy
- Electrical energy = convenient
- Simple cell. Energy stores
- Fuels/types of fuel/Fossil fuels
- Renewable/non-renewable resources
- Power station/dynamo/electricity generation
- Solar panel investigation/fair test/dataloggers

## The atomic model

- History of Atomic Theory
- Scattering Experiment
- Evidence for atoms

## Year 9

The third year course in Year 9 is based on the AQA GCSE specification. Girls should be reminded that the notes should be kept for future reference. A review of the work is part of the Year 10/11 scheme, but it is minimal.

## Motion

- The effects of forces
- Forces and Motion
- Forces and terminal velocity

## Light and sound

- General properties of waves
- Reflection
- Sound
- Other applications using light

## Electricity

- Static electricity
- Electrical circuits

## Forces and elasticity

- Weight
- Forces and elasticity



## Years 10 & 11

### GCSE Physics AQA Dual groups

Year 10

#### **Heat**

Infrared

Kinetic theory

Energy transfer by heating

Heating and insulating buildings

#### **Energy & efficiency**

Energy transfers and efficiency

#### **Electrical appliances**

Transferring electrical energy

#### **Generating electricity**

Generating electricity

National Grid

#### **Waves**

Properties of waves

Reflection

Sound

Red-shift

Unit 1 exam June

Year 11

#### **Forces & their effects**

Resultant forces

Forces and motion

Forces and braking

Forces and terminal velocity

Forces and elasticity

#### **Energy & momentum**

Forces and energy

Momentum



## **Electrical circuits**

Static electricity  
Electrical circuits

## **Mains electricity & power**

Household electricity  
Current, charge and Power

## **Radioactivity**

Atomic structure  
Atoms and radiation

## **Nuclear fission & fusion**

Nuclear fission  
Nuclear fusion

Unit 2 exam June

## **Years 10 & 11 GCSE Physics AQA Separate physics**

Year 10

## **Radioactivity**

Atomic structure  
Atoms and radiation

## **Medical applications of physics**

X-rays  
Ultrasound  
Lenses  
The eye  
Other application of light

## **Heat**

Infrared  
Kinetic theory  
Energy transfer by heating  
Heating and insulating buildings



## **Energy & efficiency**

Energy transfers and efficiency

## **Electrical appliances**

Transferring electrical energy

## **Generating electricity**

Generating electricity

National Grid

## **Waves**

Properties of waves

Reflection

Sound

Red-shift

Unit 1 exam June

Year 11

## **Forces & their effects**

Resultant forces

Forces and motion

Forces and braking

Forces and terminal velocity

Forces and elasticity

## **Energy & momentum**

Forces and energy

Momentum

## **Electrical circuits**

Static electricity

Electrical circuits

## **Mains electricity & power**

Household electricity

Current, charge and Power



## **Nuclear fission & fusion**

Nuclear fission  
Nuclear fusion

Unit 2 exam January

## **Using physics to make things work**

Centre of mass  
Moments  
Hydraulics  
Circular motion

## **Keeping things moving**

The motor effect  
Transformers

Unit 3 exam June

## **A Level physics OCR**

### **Year 12 AS Units**

#### Mechanics

- Motion
- Forces in action
- Work and energy

#### Electrons, Waves and Photons

- Electric current
- Resistance
- DC circuits
- Waves
- Quantum physics

#### Practical Skills in Physics 1

- Internal assessment



## A2 Units

### The Newtonian World

- Newton's laws and momentum
- Circular motion and Oscillations
- Thermal physics

### Fields, Particles and Frontiers of Physics

- Electric and magnetic fields
- Capacitors and exponential decay
- Nuclear physics
- Medical imaging
- Modelling the universe

### Practical Skills in Physics 2

- Internal assessment

